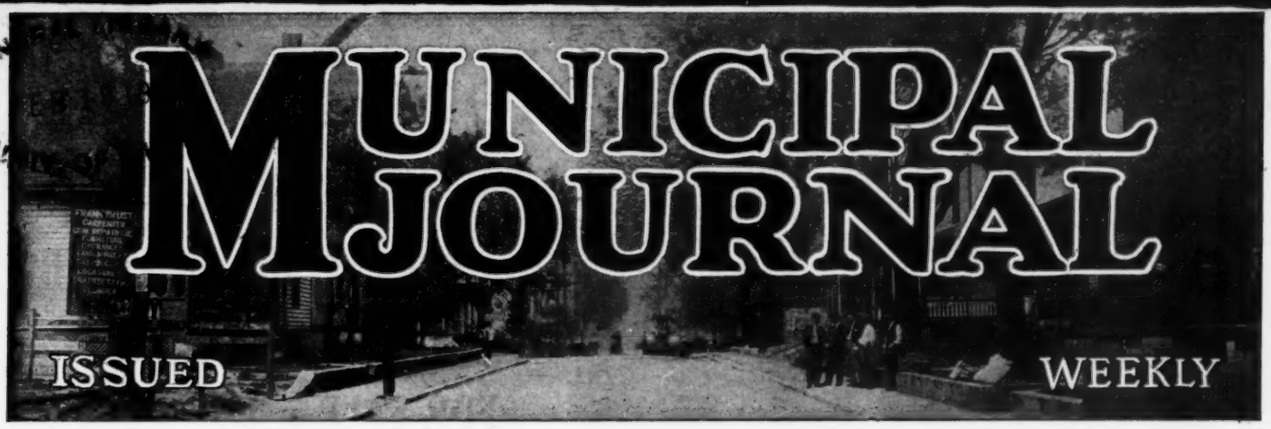

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No. 7

February 15, 1919

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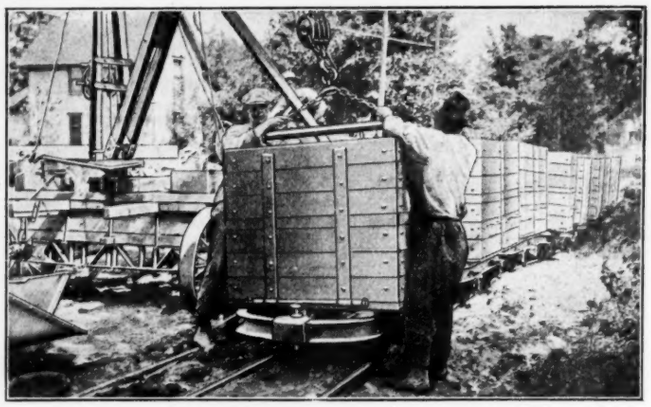

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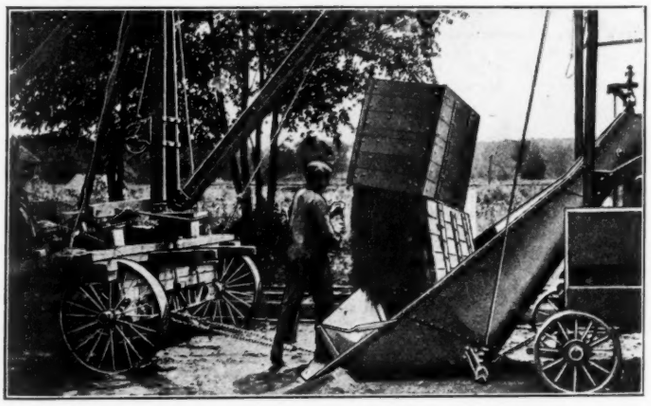

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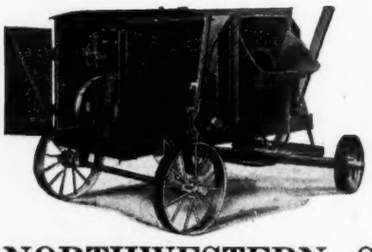

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Subscription Rates:

United States and possessions, Mexico and Cuba.....$3.00 per year All other countries .....$4.00 per year

Entered as second-class matter, January 3, 1906, at the Post Office at New York, N. Y., under the act of Congress of March 3, 1879.

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Municipal Journal

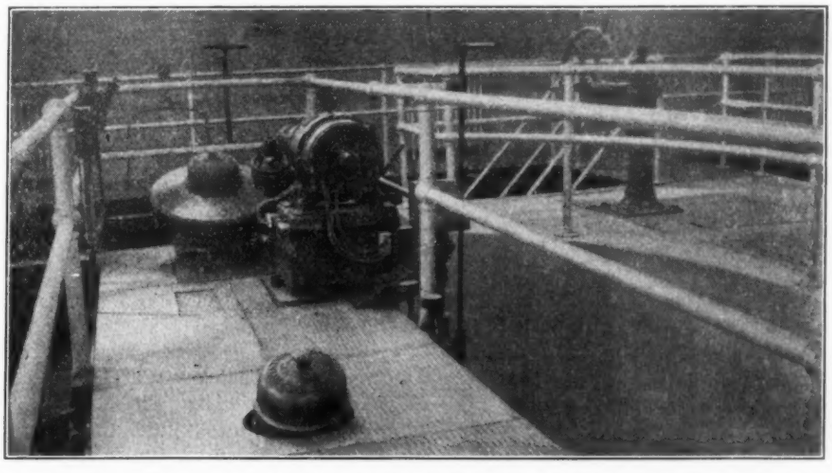
Volume XLVI NEW YORK, FEBRUARY 15, 1919 No. 7

SEWAGE SCREENING PLANT IN NEW YORK CITY

Completion of the First Unit of the General Plan of the Metropolitan Sewerage Commission—Grit Chambers, Screens, Apparatus for Handling Screenings and Other Details of Dyckman Street Plant.

The first step in the actual carrying out of the plans of the Metropolitan Sewerage Commission for the reduction of the pollution of the waters around New York City has been realized by the completion of a plant for the fine screening of sewage, which plant is located at the foot of Dyckman street, New York. This plant was completed in October, 1918, and has been turned over to the city quite recently. Following its completion, a thirty-day operation test was conducted by the contractor and the results of this test are reported to have been entirely satisfactory. At present the plant is being operated one shift of 8 hours a day.

This plant is used to screen the sewage from an area of 300 acres before discharging it into the Hudson river, the removal of grit in a sedimentation chamber, fine screening, and dispersion of the effluent through multiple outlets being the only treatment given the sewage. The area from which this sewage is collected contains about 200 people to the acre over half of it, while the other half is changing rapidly from a condition of scattered development to that of a closely built-up section of high-class apartment houses.



SERVICE BRIDGE, HOUSINGS OF SCREEN BEARINGS, AND ELECTRIC MOTOR.

The plant is located near the outlet of a combined sewer which was already in service. The dry-weather flow is diverted from this sewer to the plant, passing through an intercepting sewer to a grit chamber which is built in duplicate, from which it passes to influent chambers leading to the screens, of which there are two. From the screens the sewage enters a deep well and from this flows through an outlet pipe to a point about 100 feet off shore, where it is discharged into the river.

From gaugings of the dry-weather flow that were made in the combined sewer near the outlet, it was found that the total daily flow was about two million gallons, two-thirds of which ordinarily passed through the sewer in eight hours. The maximum rate of flow occurred between 8 and 10 A. M. on Mondays, at which time it was about three to four cubic feet per second. During periods of storms, considerable quantities of grit and sand are brought down from the hills through the sewer, the topography in this section running to steep grades and deep, narrow valleys. The sewage is comparatively fresh, although somewhat comminuted and fairly dilute.

The filtering plant was designed to have a capacity of ten million gallons per day, which would accommodate not only the present maximum dry-weather flow but also storm water to the extent of twice the amount of the domestic sewage. Storm water in excess of this is discharged into the river through the original sewer outlet.

In order to intercept the dry-weather flow and divert it to the filter, a cut-off or diverting dam 15 inches high was built in the invert of the existing sewer at a point about 1,000 feet in shore from the plant, this height of dam being sufficient to furnish the head necessary to carry ten million gallons a day through a three-foot circular conduit lined with vitrified segmental blocks to the grit chamber and through the screens. Storm water which passes over this diverting dam is carried through the old sewer, and from the original outlet of such sewer an extension of rectangular cross-section has been built to the river side of the plant, where the storm water is discharged at an elevation of 4.5 feet below mean high water.

After passing through the circular conduit, the dry weather flow is turned into either the north or south grit chamber by means of stop planks operated from the

surface. These grit chambers are constructed just outside of the filter building and are two in number, each of reinforced concrete fifteen feet long, four feet wide and nine feet deep. In each chamber are removable baffle boards that run longitudinal and are set in a fashion similar to the trough leaves of the Imhoff tank and are placed in the chambers by means of adjustable pins and strap saddles. These baffle boards serve to prevent the escaping of gases and to obtain the liquefaction of putrescible matter that may collect in the tanks.

The chambers are roofed over with removable reinforced concrete slabs faced with irons, set in Z iron frame seats and provided with two-inch lifting rings. Each cover is two feet three inches long and fifteen inches wide and can be handled by one man. If it should prove desirable, ordinary inclined bar screens are to be set at both the outlet end and inlet end of the chamber, arranged to slide in two-inch grooves.

The grit is removed from these chambers by automatic eductors which are operated by means of water-main pressure, and discharge, when in operation, through a pipe carried across the top of the storm sewer to the south embankment, where the outlet end of the pipe is below normal tide level. The eductor syphon is of five-inch manganese bronze pipe of strength sufficient to work under a pressure of 125 pounds per square inch. While the eductor is in operation, the grit in the chamber is agitated by water brought from the water mains under pressure and discharged through a one-inch standard nozzle. The eductors have a capacity of ten cubic yards per hour when operating under a water pressure of 35 pounds per square inch, and are designed to insure smoothness of discharge without using an excessive amount of water. An overflow by-pass leads from the grit chambers to the storm sewer, to become operative in case the screens should be submerged by the blocking of the effluent line.

The influent chambers leading from the grit chambers to the screens are provided with main sluice gates rectangular in shape and 36 inches high by 48 inches long of the rising stem type and operated by geared pedestals. They are capable of working against a sewage pressure of twenty pounds per square inch on either side of the gate without leakage. The gate frame and guides as well as the double-ribbed gate itself are of cast iron, and all fittings are bronze-mounted. Backwater guides are provided to prevent chattering of the gates. The lifting shaft is of cold rolled steel. The operating stand is fitted with ball and roller bearings for taking the thrust when the gate is opened or closed. Another sluice gate of similar pattern 24 inches square is set at the head of the effluent line to the drop-well to control the discharge.

The screens are housed in a building rectangular in shape with a flat roof. It is 65 feet deep, 30 feet wide and rises about 20 feet above the level of the street surface. The outside walls of the superstructure are finished with dark red face brick and trimmed with molded artificial stone. The roof is of reinforced concrete, supported on steel I beams and covered with pitch and felt roofing. Two large roof skylights of the louvered type are located directly over the screen pits, and a number of wide pivoted windows just below the roof give additional ligh and provide ventilation. Removable copper wire screens of reversible pattern cover the windows and ve tilators. This building and the filtration plant are bui on a rock ledge at the low water mark of the river about 100 feet from the outlet of the old sewer.

VIEW OF SCREEN HOUSE AND RIVER BEYOND.

The plant is reached from the street by a roadway paved with granite blocks. A coal storage pocket is built outside the building, between the grit chambers and the storm sewer and immediately adjacent to the boiler room, being connected to this room by a vertical sliding door.

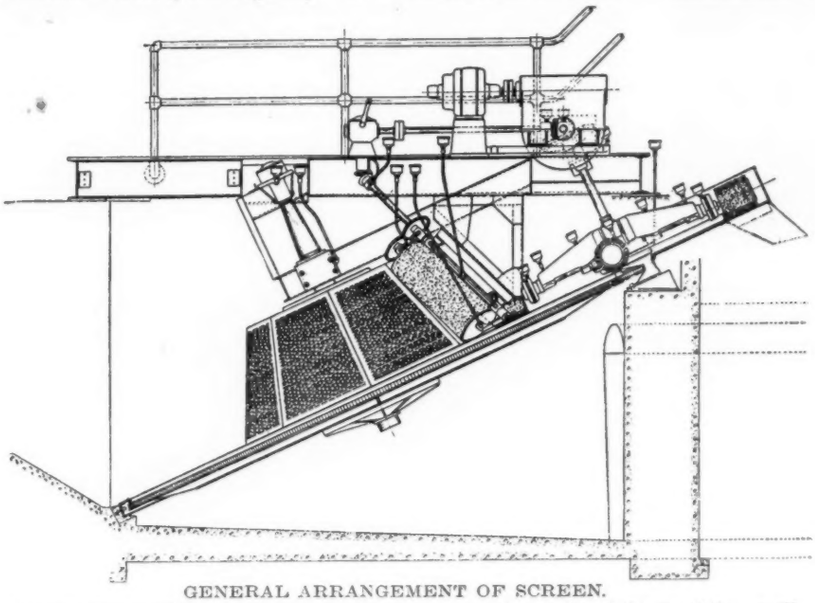
There are two screens of the Riensch-Wurl type, 14 feet in diameter and inclined 20° to the horizontal. They are of the overhung type and are set about 15 inches above mean high tide. The rated capacity, based on a sewage containing 300 parts per million of total suspended solids, is 7.75 cubic feet per second at maximum screen submergence, which is about 0.8 of the screen area. (This type of screen was described in Municipal Journal for August 5th, 1915.) The plates of the screen disc are of manganese bronze, fastened to the frame of the screen by flat-head countersunk screws. The perforations in the plates on both the disc and the cone are 3/64 of an inch wide and 2 inches long, set about ¼ of an inch apart and staggered. Each opening is of countersunk cross-section with the narrow end of the opening in the upper face of the screen and the long axis parallel to the line of travel of the brushes that sweep the screenings off of the screen. It is expected that about ¾ of a foot of hydraulic head will be lost in passing sewage through the screen at maximum submergence. The upper main screen shaft bearing is of combined radial and thrust type, while the other bearings are of the journal type. All are mounted in cast iron housings equipped with glands and packing rings and operate in oil or grease fed from cups and pipes set on or under the service bridges.

The service bridges are located on the operating floor at about the elevation of street level and directly over the screens. They are constructed of steel framing and are covered with perforated steel floor plates. Over all bearings and gears, the floor plates are built in trap-door sections. Iron pipe guard railings are provided on each side of each service bridge.

Each screen is driven by a separate and independent electric motor drive, connected to the reduction gear by an automatic centrifugal safety clutch coupling. The motor for operating each screen and brush mechanism is located on the bridge and is of 4 H. P. capacity and of variable speed type. The screen motor controls are provided with an automatic starter so as to protect against poor voltage conditions. A panel type speed regulator, with self-contained non-inductive resistance outfit is installed to give 50% reduction in the normal speed of the motor. The motors are stopped or started by push-button control, one set being located on the panel and another on the bridge near the brush drive. The power lines are carried from the cable ducts in the street to a transformer behind the panel, from there to the switchboard, and then to the electric drive.

The screenings removed from the screen by the brushes are swept into a trough of galvanized iron plate, from which they drop into cans. These cans are carried on a

turntable located directly beneath the hopper of each screen. Each turntable holds three cans each of about one-third cubic yard capacity. It is constructed of steel



GENERAL ARRANGEMENT OF SCREEN.
Screenings brushed off into cans that are set at the right of the partition wall.

and revolves on roller bearings and is operated by hand by gear wheels, the operator working from the lower floor level. The turntables are built as open as possible to allow for thorough flushing and washing.

The cans for holding the screenings are constructed of heavy galvanized iron, and are water-tight and, when covered, are air-tight. A brass pet-cock is set near the bottom of the can for draining off the surplus liquid. The cans are provided with handles for lifting and dumping. For handling the cans, an electric hoist is provided which is carried by a hand-geared carriage guide, the carriage being of the four-wheeled type running on the bottom flange of a ten-inch I beam which is suspended by steel collars hung from the roof beams. The ten-inch I beam is arranged to swing in extension form through either doorway so that the cans may be run out over the river and deposited in boats or over the roadway and deposited in carts. The hoist is operated by 1½ h. p. electric motor geared to a hoisting speed of 30 feet per minute. The transformer is single speed and is operated from the operating floor. There is a one-ton hook directly beneath the carriage for lifting the cans with the necessary chains, etc., and a half-ton hook at a distance from the carriage for dumping the screenings.

At present the screenings are carried away by carts of the Street Cleaning Department, about six or seven cans of screenings being removed each day of eight hours' operation.

A 22-inch sectional rectangular water boiler, set on the lower level near the east wall, provides means of furnishing hot water for cleaning the screens, and a steam boiler of the same size generates steam for general heating of the building and for spraying the screens with live steam. A small hot-water storage tank also is provided. Hot and cold water pipes and steam pipes, hung on short brackets, lead to an office, lavatory, shower room and points situated conveniently for cleaning the screens. About 30 feet of hose is provided at each of several hot and cold water outlets for flushing the screen house floors. The pipes used for spraying the screen terminate in special slotted sections and either steam or hot water can be discharged through them, pet cocks near the point of discharge making it possible to shut off the spray from various parts of the slotted area. The water used in flushing and washing can be charged with a disinfectant by means of a dosing tank provided with a simple dosing mixer and ball valve which is placed on a platform above the operating floor.

After passing through the screen, the sewage drops into a deep well, from which it will flow through a 12-inch cast iron flexible-joint pipe laid in the river bed to a point about 100 feet off shore and in water where the depth is 40 feet below mean high water. Multiple outlets at the end of this line provide for diffusion into the river. (This effluent pipe has not yet been laid).

In one corner of the operating floor is an office about 10 x 12 feet, and adjoining this, but separated by a partition, are two shower baths equipped with hot and cold water, a lavatory, lockers and wash room. The contract price for the entire plant was $75,000, $60,000 of which was for the two screens.

STREET CLEANING METHODS.*

Machine Sweeping—Where and When Used to Advantage—Construction of Sweeper—Operation in Batteries—Cost.

MACHINE SWEEPING.

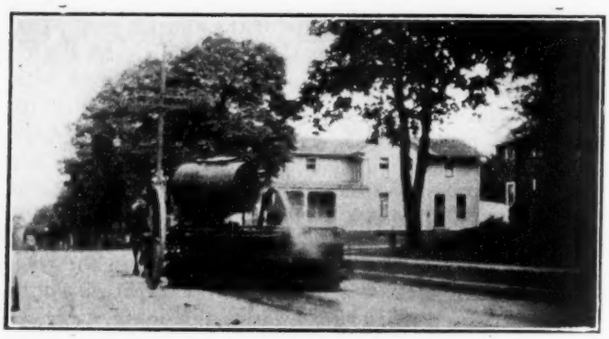
Machine sweeping is a necessary part of the street cleaning work. It is especially advantageous in Rochester on block pavements in good repair and in a few cases on brick and asphalt streets where the dirt is very heavy. It is really effective only on pavements in good condition and is best done in conjunction with patrol hand sweeping. If the streets are swept too frequently with machine brooms the cost increases beyond a reasonable figure; on the other hand, two or three sweepings a week are not enough for very dirty streets. Machine sweeping is effective in sweeping up quantities of wet leaves. Machine sweeping is done in some sections of Rochester only when shortage of labor makes it necessary, and in emergencies of this kind has saved the day.

Traffic makes machine sweeping in the down-town section impracticable in the day-time, because of delays and the necessity of driving around standing vehicles, and such sweeping should be done at night.

Rochester uses ten machine brooms, six with 8' 8" brooms and four with 10' 8" brooms. The effective stroke of a broom is from 12 to 18 inches less than the full length. Seven machines sprinkle ahead of the broom through perforated iron pipes. These do not extend the full length of the longer brooms, the perforations clog easily, and the water is not supplied in sufficient quantity or far enough ahead of the broom to be effective. A much better plan would be to abandon the use of the sprinkler pipes and use a sprinkling cart in connection wtih a battery of machine sweepers, the cart traveling far enough in advance of the sweepers to give the dust time to absorb the water before being swept up.

Manufacturers of brooms give the following as the relative lengths of service of different kinds of material:

*Continued from page 104.



DUST RISING FROM SWEEPER.
Sprinkler pipe is two feet shorter than broom.

Relative Wearing Qualities and Cost of Brooms.

Broom	Length of Service in 8-hour days	Cost of Refilling 1917 Quotation
Rattan	18 to 22	$16.00
African bass	24 to 36	20.00
Split hickory	8 to 10	12.00
Split bamboo	8 to 10	12.00
China reed	10 to 12	15.00

The broom spools are pitch filled, with split bamboo, in Rochester at a cost of $13 for either size. The life of these brooms is about six eight-hour days on rough Medina pavements, and from ten to twelve days on other pavements, which makes the average cost of broom wear about $1.50 a day. Under present conditions, this cost is not unreasonable.

Machine brooms will not do effective work when worn down to less than four inches. They should be changed end for end after every three days of service to make them wear evenly. When worn down to six inches, the counter balance should be removed to obtain better pressure.

It costs two or three times as much per unit area to sweep with one broom as to use two brooms together, and three-broom batteries are economical under some conditions.

A well-balanced gang of able-bodied men for machine broom sweeping would consist of:

	Daily wages
1 foreman @ $70 a month	$2.80
4 broomers and pilers @ 28 cts. per hour	8.96
2 machine brooms with teams and drivers @ $5 per day	10.00
1 pick-up team with a man to drive and load	5.00
1 loader to help driver	2.24
1 sprinkler and driver in dry weather	5.00
Total wages per day	$34.00

Such a gang should be able to sweep 180,000 square yards or more of pavement a day.

The practice of machine sweeping on very rough Medina block and stone pavements might well be discontinued as a waste of time and money. In the first place, the machine brooms not only do not reach into the depressions in the pavements, but they fill them up with dirt as they go along and thereby greatly increase the labor of the piling gangs which follow. Secondly, many of the Medina streets are so rough that most traffic avoids them entirely. The cheapest and best way to clean these streets is to flush them once or twice a week with hose.

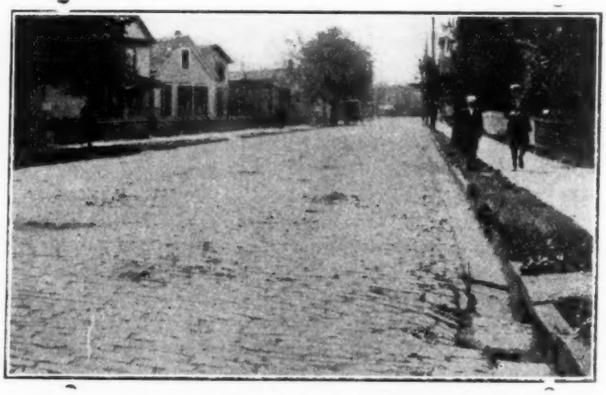
Occasionally machine sweeping is done on macadam streets, and results inevitably in removing the binder and damaging the surface. This practice should be discontinued.

From observations of the work and a study of modern methods and results, the following practice and procedure are suggested:

In general, two-machine batteries should be used. This has proven most economical locally and should tend to reduce the present high unit costs. Occasional machine sweeping should be followed up by a piling and pick-up gang and augmented by patrol sweepers. Sprinkling from 10 to 20 minutes ahead of the machines will prevent them from raising clouds of dust, and it will produce better results because of the softening of the street dirt. Sweeping should be done during light rains and after heavy ones so as to obviate, whenever possible, the need for sprinkling. The area to be swept should be sprinkled just enough to keep down the dust.

Machine sweeping should be done consistently in the vicinity of coal yards and cellar excavation work and at points where a number of mud streets connect with a hard pavement, because quantities of material are dropped from loaded wagons or strewn along the paved streets for blocks by the wagon wheels. In such cases it is practically impossible for a patrol sweeper to keep pace with the dirt deposited; the machine sweeper is best adapted to this kind of work.

Sprinkling cart drivers should be given definite instructions and required to go through certain routine work. After hitching up, the driver should partly fill the tank at the stable and try out the spray heads, to be sure they are in good working order before leaving the barn. He should make sure that the axles are well greased. Horses



STONE BLOCK STREET BEFORE SWEEPING.

SAME PLACE FIVE MINUTES LATER.
Sweeper works dirt into depressions. Comparatively small amount swept into gutter.

should be watered every hour, while the tank is being filled. The following equipment should be on the cart: A bucket for watering horses, a regular hydrant wrench, a wheel handle for special valves, a filled oil can, and a red lantern filled and cleaned for night work. The sprinkling cart should start out in advance of the sweeping machine and proceed directly to the starting point. Hydrants should be flushed out before the tank is filled, and they should be opened and closed with care. Burlap spray shields should be used on leaky hydrants and hose to protect pedestrians.

Sprinkling should begin at the center of the street and continue not more than two long or four short blocks before turning around, unless the entire width can be sprinkled in one trip, as is frequently the case. The route should be sprinkled in the same direction the machines are to follow. The tank should be filled as often as is necessary, but care should be taken to avoid use of excessive quantities of water. In many cases where the dust is light it will be unnecessary to keep the nozzles open continuously. In such cases alternate wet and dry places 20 to 30 feet long should be left. Cross walks should not be sprinkled.

The machine sweeper drivers also should be required to follow a definite routine. Before leaving the stable, all moving parts of the machine should be oiled and greased. The following equipment should be supplied on the machine: A monkey wrench, a filled oil can, a red lantern filled and cleaned for night use, a regular hydrant wrench, a wheel handle for special hydrant valves, and a bucket for watering horses. Before going out of the barn, the broom levers should be tested to see if the machine is operating properly. The broom should be thoroughly wet before the work is started, to make the fibres flexible. When the fibres are worn down to four inches or less, a new broom should be put on the machine.

When ready to begin work, the first machine should start sweeping a strip to the right of the center of the street, with the broom adjusted so as to sweep to the right. The second machines should follow close behind the first machine and in a position to sweep the strip to the right of the first machine and so as to lap the stroke of the machine preceding by about six inches. (This will make it necessary for the near horse of the second machine to walk on the windrow made by the first machine.) In no case should the last machine sweep closer than 18 inches to the curb.

The machines should continue not over two long or four short blocks, which have previously been sprinkled, before turning and sweeping the other side of the street. This will allow the sweeping gang following to bunch and pile the dirt on both sides at the same time, and so complete a section in a reasonable time. The work should be continued until the schedule of streets is complete. Drivers of vehicles standing along the routes should be requested to move out of the way. If they refuse, no time should be wasted in arguments. Vehicles should not be moved without the authority of the owners.

(To be continued)

INCREASING MUNICIPAL REVENUE

Why Higher Per Capita Revenues Are Necessary—Methods Employed by the Larger Cities of the Country for Increasing Revenue—Delinquent Taxes—Exemptions—License Taxes on Various Kinds of Business

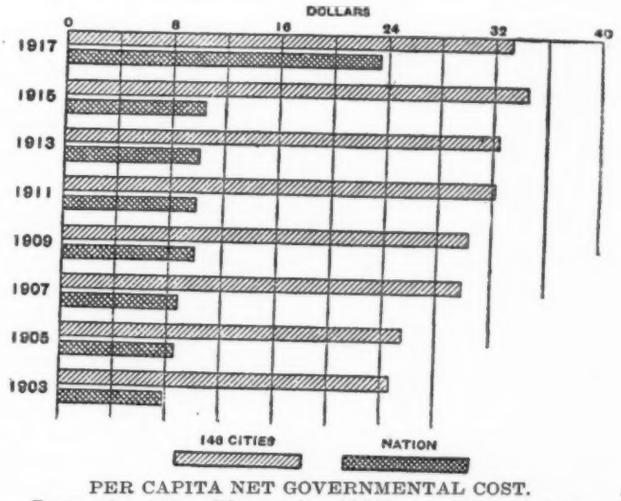
The adoption by the required number of states of the prohibition amendment to the constitution has given emphasis and immediate importance to a condition which has been developing in municipal affairs for a number of years past. During 1917 (the latest year for which reports are available) the revenues secured from liquor taxes or licenses by the 219 cities having 30,000 population or more amounted to about $37,000,000. The total receipts from taxes by these cities for the same year was $742,000,000. It appears therefore that the liquor licenses amounted to a little less than 5 per cent of the total receipts from taxes of all kinds. There are quite a number of cities, however, which derived a much larger percentage of their revenue from their liquor licenses. For instance, Perth Amboy, N. J., and Peoria, Ill., derived 15 per cent of their income from this source, West Hoboken, N. J., 16 per cent, East St. Louis, Ill., 21 per cent, and Joliet, Ill., 23 per cent; while there were a considerable number which derived 10 per cent or more from such licenses.

When the income of a city from a certain source is reduced, there are generally only two alternatives, either decreasing expenses or increasing income from some other source. While the 5 per cent average losses to these largest cities seems a small amount, still it means either a reduction in the budget for all time to come or an increase in the taxes collected in other ways.

REDUCING MUNICIPAL EXPENSES.

Before planning for an increase in taxation, wisdom demands that it be ascertained first whether expenses cannot be cut down to meet the decreased income. The average "governmental cost payments" ("The governmental costs of a municipality for a given fiscal year are its expenses, interest, outlays, and expense ledger adjustments for that year") during the thirteen years from 1903 to 1915 inclusive have increased from $24.60 per capita to $34.53, the increase being continuous although not uniform.* (There was a slight decrease between 1915 and 1917 owing to the economies due to the war.) In addition to these payments, we find that the net indebtedness of the cities increased during the same period from $44.71 per capita to $77.86, or about 75%. ("By net in-

*All the figures used in this article are based upon the report of the U. S. Census Bureau for the year 1917, embracing all cities of over 30,000 population.



PER CAPITA NET GOVERNMENTAL COST.
Payments of the cities having 30,000 population or over, and of the nation.

debtedness is meant the total debt obligations outstanding, less the resources available or provided for their immediate or ultimate redemption. It is obtained by deducting the assets of the general sinking fund from the sum of the funded and floating debts.") While the population of these cities increased during this period 38.2%, their net indebtedness increased 140.7%. In the great majority of cases this indebtdness was occasioned by the issuing of bonds for permanent improvements, but in some cases the proceeds of the bonds have been used for cost payments.

The cause for this increase in per capita cost of operating our cities is not difficult to discover. It is not at all necessary to attribute it to increasing extravagance, nor would this be correct, for we believe that in general the affairs of American municipalities are being conducted each year with increasing efficiency and economy. The chief cause is undoubtedly the increasing number and extent of activities which the city is called upon to conduct for the benefit of its citizens. The following is quoted from a report prepared by the State Bureau of Municipal Information of the New York State Conference of Mayors and Other Officials, which report we shall have occasion to refer to several times in this article. Concerning this matter of "expanding functions" this report says:

> Functions of government, and particularly those of city government, become more numerous, complex and costly as population increases. These functions are made necessary as primitive methods, involving individual effort, no longer serve the purpose. As a community grows, a municipal water system must supplant wells and cisterns; a sewerage system must take the place of out-houses and cesspools. The wastes of the community such as ashes, garbage, street litter, sewage and rubbish must be collected and disposed of by community instead of by individual efforts. One by one services which were ordinarily performed by the householder when the community was smaller must be surrendered to the city as it grows.
>
> Higher standards of living, a better understanding of the causes of disease and crime and a keener appreciation of the value of preventive work, have created a public demand within recent years for municipal activities that were not known or considered a decade or two ago. Municipal hospitals, clinics, dispensaries, playgrounds and other recreational facilities are today municipal necessities, and not fads as they were regarded at one time. These necessarily increase the tax burden, although they decrease the cost of service to the community as a whole and add to the comfort and enjoyment of the inhabitants.

Other additions to the expense are caused by substituting paid for volunteer fire departments, constructing plants for purifying the water supply, providing more brilliant street illumination, more expensive pavements for carrying the heavier and more abundant vehicular traffic, more thorough cleaning of such pavements, and numerous other improvements in municipal utility constructions and housekeeping. None of these things can be considered as luxuries, and most of them are absolutely essential to the effective and economical conduct of the activities of a modern municipality. These are sufficient to account for a large part if not the whole of the great increase in the cost of operating our cities. And it does not seem probable that the limit has been reached or even approached. If our cities are to grow in size and usefulness, these municipal functions must be expanded in scope and increase in number, and the per capita costs must continue to increase.

Among other causes for increased cost of conducting city governments are an increase in the rate of interest on bonds issued for municipal purposes, higher cost of living demanding higher wages for municipal employes, while in some cities woman's suffrage adds to the cost of elections by practically doubling the number of voters, and in some the workmen's compensation law applies to city employes and adds somewhat to the total expenses.

During the past fifteen years the increase in per capita cost has averaged about 3% a year, and it seems probable that a continuation of this increase may be expected in the future.

It has been suggested and in fact asserted many times that the revenue lost to the cities by abolishing the liquor traffic will be more than made up in the reduction of municipal expenses made possible by decreasing the size of the police department, the numbers of reformatories and hospitals, etc. Taking the totals for all of the cities reported, in round numbers only, we find that the total expense of police departments for the year 1917 was $69,000,000, for poor institutions $5,900,000, for insane institutions and hospitals $16,400,000 and for correctional institutions for adults $6,000,000. This gives a total of $97,300,000. The loss of revenue from the adoptions of prohibition is $37,000,000, or about 40% of the total expenses of the police departments and the institutions which might be claimed to owe part of their necessity to liquor. It hardly seems probable that even the maximum amount of benefit which can be conservatively estimated as accruing from the operation of the prohibition amendment would so far reduce the demands on these several municipal functions as to permit reducing the appropriations for them by this amount.

INCREASING INCOME.

There would therefore appear to be no possibility of meeting the condition referred to by reducing expenses unless we wish to take a backward step in the many things which to us have come to mean modern civilization. In looking for some plan of increasing revenue, the first tendency is to cast about for some new source, or to consider which of the present sources can increase its contribution to the revenue with the least disarrangement of business conditions or which will arouse the least storm of protest from the victims. As suggested editorially last week, it is worth considering whether the present sources of income are being drawn upon not only to the limit allowed by law, but even with justice to all concerned by securing the collection of all taxes due under existing tax laws. Leniency and delay in collection of taxes is a benefit to neither the city nor the tax-payer except in those indefensible cases in which the tax-payer is able to evade payment altogether. The collection of delinquent taxes should make a collector more popular with all citizens except those who have endeavored to evade payment, and these are or certainly should be greatly in the minority. It would therefore seem as though failure to make every effort provided by law for collecting all taxes must be due largely to pure laziness on the part of the collector. Be that as it may, we believe that many cities could more than make up for the loss in liquor taxes by enforcing payment of taxes already assessed.

Another suggestion is to reduce the tax exemptions on real property. The tax committee of the New York Conference of Mayors has advocated that real properties of fraternal and benevolent organizations, private sanitariums and hospitals other than free and public hospitals, church property other than the buildings used for worship and religious instruction, and private schools which charge for instruction, be placed on the assessment roll and required to bear their share of the expense of state and local governments. It was stated that there were private schools charging a tuition which owned $51,000,000 worth of property in the state on which no taxes were paid. The total amount of property in that state exempted from taxes was, according to the latest figures, $636,000,000.

The exempting of church, hospital and similar property from taxation may be considered in the light of a contribution by the people to these benevolent organizations

and purposes, and if the people intentionally and knowingly release the holders of this property from taxation for this purpose there is certainly no reason why objection should be entered. There is some question, however, whether the taxpayers generally understand just what this exemption means to them. For instance, it is estimated that if the exempted property in New York State were taxed for state purposes on the same basis as other property, it would contribute one-third of the entire expenses of the state; in other words, if this property were not exempted each tax-payer in the state would have one-third less tax to pay. Certainly a more businesslike and more open way of making public contribution to these objects of benevolence would be to collect taxes from them for all real estate which they may hold, and to make contribution through the municipal or state officials of such sums as it may be desired to contribute to each of them. One desirable result of this, it is anticipated, would be to remove the opportunity (now taken advantage of in many cases) for unworthy organizations to secure the advantages of these exemptions through subterfuge or favoritism.

Other methods suggested are the semi-annual collection of taxes, thus saving interest paid on temporary loans issued in anticipation of taxes and diminishing tax delinquencies by permitting property owners who are unable to pay the whole tax to pay at least half and go in arrearage for the other half. Some cities do not collect any of their taxes in advance but borrow money to pay running expenses until the tax is collected, the interest on which loans must, of course, be added to increase the tax levy.

The common plan in most cities for increasing taxes, because the easiest, has been in the past to increase the tax on real estate. For instance, during the fourteen years from 1903 to 1917, the per capita tax collected from real estate has increased from $12.98 to $20.57, while during the same period the liquor taxes have decreased from $1.32 to $1.16 per capita. The result of this has been inevitably an increase in rent and in the cost of carrying on every kind of business, since all of these directly or indirectly pay the land taxes. In the opinion of a great many, the time has come when real estate can no longer bear so large a share of the burden of increasing taxes. Moreover, since increased taxes on real estate are added in their entirety, if not even with an increment, to the rentals paid by the laboring classes, there seems to be justice in the demands that methods be found for raising additional taxes such that they cannot be unloaded so directly onto those least able to afford to pay them.

Conditions in this respect are by no means the same in all cities, since some raise a much larger percentage of their total income from real estate taxes than do others. Of all of the cities included in the census report, the average percentage of total revenue receipts that come from real estate was 63.9. One city, however, reports as high as 88% derived from this source, and several others exceed 80%; while, on the other hand, one city reports as low as 34.5% and quite a number are below 50%. In the case of the first cities, there would seem to be abundant opportunity for raising additional revenue without increasing the taxes on real estate, while in the case of the cities now raising less than 50% of their revenue in this way it would seem that real estate could stand the burden of the necessary increase.

When inspection is made of the practices of the various cities to discover new sources of income, other than taxing real estate, we find these bewildering in number and variety. The Census Bureau classifies the various revenue receipts as those obtained by taxes on property, poll taxes, and business and non-business licenses; special assessments and special charges for outlays; fines, forfeits and escheats; subventions, grants, gifts, donations and pension assessments; earnings of general departments; highway privileges, rates and interests; and earnings of public service enterprises. As already stated, the majority of cities obtain more than 50% of their income from taxes on property. Only a small part of the income of any city is derived from poll tax, less than half of the cities deriving any income from this.

Business and non-business licenses are the source of considerable income in most cities, this running as high as 15 or 20% of the total in some cases. It is in this class that is found the greatest variety of sources of revenue. For instance, the first city listed in the report, Birmingham, Ala., lists about 350 different kinds of business that are licensed, from which it obtains 19.1% of its total revenue. Other Alabama cities are not far behind it in the number and variety of licensed businesses. Most of the rates in Birmingham are not high, but the aggregate amounts to nearly $390,000 a year. Dog licenses are collected by most cities and the total amount so collected in the cities of the report was $661,909, of which Chicago collected $113,610.

Taxes collected with issue of license other than on liquor traffic totaled almost ten million dollars, every city of over thirty thousand population obtaining some income in this way. Taxes collected without issue of license, which totaled $6,534,834 for the cities reported by the census, were as follows:

In Birmingham, Ala., one-half of one per cent is levied on the gross premiums collected by fire insurance companies.

California collects taxes on gross earnings of public service corporations in lieu of all other taxes and turns over to the cities on demand an amount equal to what each city would have collected from such corporations located within such cities, to cover payment of bonded indebtedness incurred prior to 1910 and interest thereon.

The kinds of business taxes collected in Washington, D. C., together with the rates at which they are levied are as follows: Insurance companies, except mutual fire insurance companies, are assessed one and one-half per cent on premiums; building and loan associations, two per cent on gross earnings; incorporated savings banks, electric light companies, telephone companies, and street railway companies, four per cent on gross earnings; barge and dock companies and gas light companies, five per cent on gross earnings; National banks and trust companies, six per cent on gross earnings; market companies, four per cent on earnings from conduits.

In Georgia a tax on gross premiums received by insurance companies is collected in three cities. The rates are one per cent in Atlanta, one and one-half per cent in Augusta one and one-fourth per cent in Macon. In Macon wholesale dealers in gasoline pay a tax of one-half of one per cent on amount of sales.

In Illinois a tax for the benefit of the fire department of the city is levied on foreign fire insurance companies to the amount of two per cent of premiums collected within the city by their agents.

In Kansas, foreign fire insurance companies pay to the State two per cent on the gross premiums collected in each city and this tax, less three per cent, is paid to the firemen's associations in the cities where collected.

Maine collects business taxes on telegraph, telephone and railroad companies and pays therefrom to each city or town in the State an amount equal to one per cent of the capital stock of such companies held by residents of that municipality, the total so paid not exceeding the amount collected. The tax imposed on telegraph or telephone companies varies according to the amount of gross annual receipts collected within the State from one and one-quarter to six per cent of such receipts. The tax imposed on each railroad for each unit of railroad operated within the State is a percentage of the average gross transportation receipts per mile of the entire system both within or without the State, the percentage varying according to the amount of such average receipts per mile from one-quarter of one per cent to four per cent for a

street railroad company and from one-half of one per cent to five and one-half per cent for any other railroad company.

In Minnesota the State in each city collects on the gross premiums of foreign fire insurance companies a tax of two per cent, which is paid into the firemen's relief fund of the city in which collected.

A tax of five per cent in St. Paul is levied on the gross earnings of trust companies and of public service corporations other than street railways.

In Minneapolis there is levied a tax of one-fourth of one mill on each bushel of wheat and flaxseed and one-eighth of one mill per bushel on all other grain received or handled in elevators.

St. Louis taxes merchants and manufacturers at a rate of $1 on every $1,000 of sale, and street railway companies one mill for each passenger carried during the year.

Montana collects a tax of two per cent on premiums of fire insurance companies. One-half of the amount collected in Butte is paid into the city treasury for the benefit of the firemen's disability fund.

In Lincoln, Neb., the following business taxes, based on the gross receipts, are collected without issues of license: Electric light and power companies, two per cent; express companies, two and one-half per cent; gas companies, two and one-half per cent; street railway companies, five per cent; telegraph companies, two per cent; telephone companies, two per cent.

All cities in New Jersey collect a tax of two per cent on the gross earnings of fire insurance companies, and the receipts from this source are distributed equally between the firemen's pension fund and the firemen's relief associations in the cities where collected. According to an act of the Legislature cities are empowered to levy a tax of five per cent on the gross receipts of auto buses.

In North Carolina, fire insurance companies, except such as invest three-fourths of their capital in the State or in State securities, pay to the State a tax of one-half of one per cent on the gross premiums collected. The State pays to the treasurer of each city having an organized fire department and complying with certain requirements the amount of such taxes collected in that city for the benefit of the local firemen's fund.

In Oklahoma a tax of two per cent on the gross premiums of foreign fire insurance companies is collected by the State and one-half of the receipts in each city is paid to the local fireman's pension fund.

In all Rhode Island cities auction sales are taxed one-tenth of one per cent of the proceeds and eighty-seven and five-tenths per cent of this amount is remitted direct to the State by auctioneers conducting the sales and the balance is paid into the city treasury.

Each city in South Carolina receives through the State a tax of one per cent on the gross premiums collected by fire insurance companies licensed to do business within the State. Insurance companies not so licensed can place insurance in the State only through licensed insurance brokers. A tax of four per cent is imposed on the premiums which are collected. One-half of the amount of such collections in each city is returned by the State through the city where collected for the equal benefit of city corporation and the firemen's insurance and inspection fund.

Dallas, Texas, collects a four per cent tax on gross earnings of detective agencies.

Wheeling collects a two per cent tax on gross premiums of foreign fire insurance companies.

All cities in Wisconsin collect without issue of license certain business taxes levied at rates prescribed by statute as follows: Taxes on net income ranging from one to six per cent, of which seventy per cent is retained by the city, ten per cent is paid to the State and twenty per cent is paid to the county in which collected, special provision being made in the case of proprietors of grain elevators or warehouses. The tax on the gross earnings of telephone companies varies from two and one-half to five per cent; the city retains eighty-five per cent of the tax and the State receiving the remainder. Casualty insurance companies are taxed two and one-half per cent of their gross premiums; fire and marine insurance companies, two and three-fourths per cent of their gross premiums; and life insurance companies three per cent of their gross income from all sources.

General license taxes are collected on bicycles, motor cycles, automobiles, drivers of motor vehicles, horse-drawn vehicles, garages, motor trucks, weapons, social clubs, push carts and floats. Special property taxes are assessed by certain cities on savings bank deposits, mortgages, inheritances, steamboats, street railways, corporations, horses and mules, insurance companies, gas and electric companies. For instance, in New Hampshire savings banks pay one per cent per annum on special deposits or capital stock after deducting the value of all real estate. In Ohio there is a collateral inheritance tax of 5 per cent, half of which is paid to the city, village or township in which it originates.

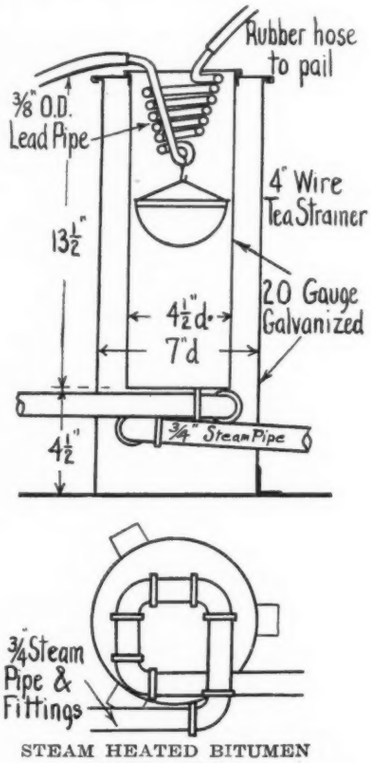
When all is said, however, there remains the fact that all of these special methods of raising revenue, numerous and ingenious as they are in many cases, bring in only about 9 per cent of all the money raised by taxation of any kind in the cities reported, and further combing of the field would probably bring to light possibilities that would not even approximate, in the amount which could be realized therefrom, those that would seem to exist in a more thorough and effective collection of the property taxes already provided for.

Most cities reimburse themselves for certain expenditures made for public improvements and a few public services rendered, by assessments made against the property benefited. This plan of meeting the problem will be discussed in a future issue.

STEAM HEATED BITUMEN EXTRACTOR.

By C. H. LOVEJOY.

Portable asphalt plants are not located in one place long enough to have electricity installed about the premises. The extractor shown in the sketch was made at slight expense and gave satisfactory results in making analyses of asphalt pavement samples, even in cold weather and in a rough shanty.



STEAM HEATED BITUMEN EXTRACTOR.

A small amount of live steam blows through the coil and furnishes enough heat to evaporate the carbon disulphide in the reservoir. This condenses on the lead pipe coil and drops back through the sample in the tea

strainer. Cold water should be passed through this coil just fast enough to produce rapid drops, without running a stream. This means about two pailfuls in five hours.

Weigh 200 grams of sheet asphalt or topeka mix, or 400 grams of a coarser mixture on a chaslyn balance. Three 5" filter papers are overlapped to cover the inside of the tea strainer, and the sample placed therein. Put 250 c.c. of carbon disulphide in the reservoir, and hang the sample from the lead coil.

After 5 hours extracting the sample should be clean and the bitumen with the disulphide at the bottom of the reservoir. Pour this into a porcelain evaporating dish and burn to ash. Add the ash to the sample and weigh. Calculate the bitumen as the loss in weight between this and the original weight of sample taken. The usual screen test is then carried out with this mineral aggregate.

The general principle of this extractor is not new, but the writer, being compelled last year to make tests where electricity was not available, made up this extractor from odds and ends around the asphalt plant. Even used outdoors in freezing weather it worked more rapidly than the electric heated extractor.

MAKING WATER ANALYSES.

Reasons Why Analyses Are Desirable, Chemical, Bacteriological and Physical—Private or Municipal Laboratories—Suggestions for Taking Samples and Analyzing.

It is extremely desirable that regular examinations be made of the water as supplied to the consumers in every city, and in the majority of cases that additional examinations be made of the water at one or more points before being finally delivered into the distribution mains. There are three general arguments in favor of this—first, that it is necessary for learning promptly any changes that may be taking place in the raw water as it reaches the reservoir or plant, and taking immediately such precautions as may be necessary; second, that it is necessary for learning the efficiency of any treatment which the water undergoes, whether it be merely sedimentation in a reservoir or that by the most elaborate purification plant, and remedying lapses or defects in such treatment; third, that definite figures and facts may be available with which to answer complaints of citizens as to the quality of the water, and for compiling a record of the operation of the plant.

An analysis of the water as it reaches the reservoir or in the reservoir itself is generally desirable in order to learn of the initial development in the reservoir of algae or plankton growths generally, in order that an immediate treatment may stop any further development; to detect the presence in water coming from various parts of the catchment area of organic matters in solution or suspension that might serve as food for a development of algae; and also to detect the presence in any tributary stream of contamination by sewage or other polluting matters. Also an occasional analysis of the water at different depths of a reservoir informs a superintendent as to the extent to which the lower strata are becoming polluted, and can be interpreted to give warning of impending turnovers and indicate the proper time for drawing off the foul bottom water and the amount of such water that it is desirable to remove in case this method of treatment is practised.

Where the water is treated by rapid sand filtration, in which chemicals are always used for purposes of coagulation, the amount of chemical necessary will vary with certain mineral contents of the water, and if the variations in such contents are not known, either there will be from time to time an insufficient amount used with resulting diminution in the efficiency of the plant, or at other times there will be an unnecessarily large amount of chemicals used with resulting increased costs and possibly creation of objectionable taste or odor in the water. The most important feature, however, is the possibility, which is by no means negligible, that the treatment will not secure the degree of bacterial purification necessary to insure against the delivering of pathogenic bacteria to the consumers; also the possibility that water will contain hardness, sulphur or other matters in solution or suspension that will make it objectionable for use in boilers or in industries in which water plays an important part.

Analyses taken of the water as delivered have enabled many a superintendent to retain the confidence and good will of consumers who have experienced objectionable tastes or odors in the water as drawn from their faucets, and whose complaints might otherwise have been met at the office by non-committal replies or promises to "do something about it," which promises the superintendent, ignorant of exact conditions, might have been unable to keep. If a record is taken daily, or at intervals of only a few days, of the various physical characteristics of the water, both as it enters the distribution system and as it is drawn from the faucets at one or more points in that system, such data will generally enable him either to convince the citizen that his complaint is not justified, or to inform himself concerning the causes of the objectionable conditions.

In this connection it is well to remember that there frequently occur local conditions which cause local complaint, probably the most common being the creation of suspended matter in the water by the stirring up of sediment which had collected in the mains, such stirring up being occasioned by a fire or other use of a fire hydrant, a broken main, or any other cause of considerable change in velocity or direction of flow in one or more sections of the distribution system. The superintendent, knowing from his records that, on the day concerning which complaint of muddy water was made, the water entering the mains was clear, will naturally inspect the records of the outdoor gang to learn whether some such occurrence in the neighborhood of the complainant was not accountable.

Analyses that should be made of the water include bacteriological, chemical and physical, the first chiefly to determine the probability of the presence of pathogenic bacteria; the chemical, for determining the presence of sewage pollution, hardness or other mineral constituents that make the water objectionable for use (such as iron, sulphuric acid, etc.), of carbon dioxide, of alum, free chlorine or other matters resulting from the use of chemicals in purifying water; and physical for determining turbidity, color, odor, taste and temperature; also microscopic examinations, chiefly in connection with investigation of plankton.

The frequency with which such examinations should me made vary with the kind of examination, the season of the year, the frequency and rapidity of variation in the character water, etc. Where a supply is from deep wells the character of the water is not subject to rapid changes, and fewer examinations will be necessary than when it is from surface supplies or even shallow wells. Where the water is known to be polluted, it should of course be treated; but the fact that it is being treated should not cause it to be taken for granted that the treatment is necessarily and continuously effective. Any plant or method of treatment is subject to unanticipated

and unrealized lapses from full efficiency, no matter how careful or intelligent the operation; and sufficient analyses of the water and of the chemicals applied should be made to furnish frequent assurances that the operation of the plant maintains an acceptable degree of efficiency. It should be realized that a defective filter may at any time pass water containing bacteria which may cause scores of deaths from typhoid.

Chemical analyses generally need not be taken so frequently as bacteriological, chiefly because the chemical composition of the water does not ordinarily change suddenly, except where such sudden changes are made regularly at certain hours of the day or certain days of the week or month. Daily analyses made during the first few weeks or months of operation will generally give sufficient information concerning such periodic variations. The penalty for ignorance concerning chemical changes that occur in the water is not nearly so serious as that caused by a sudden but unknown increase in the pathogenic bacteria content.

In the case of physical examinations, also, it is not ordinarily necessary to make these with great frequency, except such examinations as may be necessary for controlling the treatment of the water or for keeping a daily record of the efficiency of such treatment. Physical examination, and especially microscopical examination, of reservoir water, is desirable at greater frequency during the season when algae are to be expected (as indicated by previous experience) than during other seasons of the year. By knowing the exact day when it is best to apply copper sulphate to a reservoir, such treatment can be made much more effective and trouble from tastes and odors due to algae may be largely anticipated and prevented.

Making water analyses, and especially the bacterial analyses, requires considerable experience if they are to be reliable. At the same time, many of the more generally useful ones can be made by any superintendent of reasonable intelligence after a little instruction and experience. As described in Municipal Journal for June 28, 1917, the Georgia State Board of Health encourages all waterworks superintendents to make the more important analyses themselves. If samples are shipped to a laboratory outside of the city, there is necessarily considerable delay in obtaining results, and in addition the water may undergo some change in condition during transit. If the analysis can be made by the superintendent himself as soon as collected, it permits a direct and immediate control of the purification treatment or other operating features of the plant. Of course certain physical tests, such as that of temperature, can be made only at the point of collection. Most state boards of health will examine samples of water sent to them from cities within the state, and unless the cities can maintain a competent professional chemist and bacteriologist, such examinations should be made at regular intervals, say four times a year, for the purpose of checking the tests made by the superintendent.

But sole reliance should not be placed in these occasional tests, and even small plants should maintain a laboratory for making the more important tests. It is possible to secure good equipment for routine water bacteriology, such as bacterial counts and tests for B. coli, for about $125. The cost of chemicals and bacteriological media is quite small after the laboratory is once started. An incubator, sterilizer and similar equipment can be obtained that operates by either electricity, gas or gasoline, the first being generally most convenient and safe. The Georgia Board of Health finds by experience that the average superintendent can learn easily the necessary bacteriological technique for making routine control tests after a few days' training under an experienced worker. He should provide himself with one or two books on water bacteriology and chemical and physical analyses, and a copy of the "Standard Methods for the Analysis of Water," 1917 edition, of the American Public Health Association.* While of course he will probably make some errors at first, after a few weeks of experience it should not be difficult for him to obtain results that, at the very least, will be far better than having no certain and definite information whatever of the kind that they are calculated to furnish.

The ability of someone connected with the plant to make tests of this kind will frequently prove advantageous in unexpected ways. For instance, in 1917 the head of the Hartford, Conn., laboratory was called upon to answer a complaint of a large department store that the water from their taps was so hard that it could not be used in their hair-dressing department. He found the water to have about three times as much hardness as that of the city supply, showing positively that it was not pure city water, and an investigation revealed that there was being mixed with it a deep-well private supply that was used by the store for its sprinkler system. In the same city the fire department claimed that the water was corroding the brass fixtures on the fire hose; but the chemist knew that there was no acid in the city water and investigation revealed that sulphur was absorbed from a certain make of fire hose by water that stood in it when stretched out on rack supports and that this sulphur was responsible for the corrosion.

In addition to analyzing water, the chemist should also be prepared to analyze hypochlorite, lime and other chemicals that may be used in treating the water. In addition, if the water department or company is engaged in any construction work, the chemist frequently tests cement and other materials used in such work.

The chemist might also analyze and test the coal and oils used in the pumping plant. By arrangement with the local board of health or health officer he could also make analysis of drugs and foods, including milk, and make other tests and examinations for the various city departments as needed; for which services the laboratory should receive compensation from the city that would help to cover the cost of its operation.

In several of the larger cities there are to be found private laboratories that make a specialty of water analyses, and in such cities it would generally be satisfactory and cheaper to employ these private laboratories for making the analyses. Except, however, that where a filtration plant or other purification plant of considerable size is operated, there is generally sufficient analytical work to keep at least one chemist and bacteriologist busy; also, such plant is frequently at a considerable distance from any private laboratory; for which reason more prompt and reliable results from analyses are obtainable, and ordinarily at less cost, if they are made in a laboratory located at the plant and by a chemist or bacteriologist employed for this purpose.

*The American Public Health Association several years ago adopted, after discussion by the leading experts of the country, a set of "Standard Methods for the Analysis of Water." These were revised in 1914 and again in 1917. These methods have been followed for years by the majority of chemists and bacteriologists who make analysis of water supplies, and it is recommended that waterworks superintendents secure a copy of the publication describing these methods and follow these in their analytical work. They are published by the association at $1.25 a volume, bound in water-proof cloth.

(To be continued.)

Municipal Journal

Published weekly at
243 West 39th Street, New York, N. Y.
by
Municipal Journal and Engineer, Inc.

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Western Office: Monadnock Block, Chicago

Contributed Articles and Reports

Contributions suitable for this paper, either in the form of special articles or as letters discussing municipal matters, are invited and paid for.

City officials and civic organizations are particularly requested to send to Municipal Journal regularly their annual and special reports.

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WORK AS A COAGULANT.

Water rendered muddy by a long and violent storm will clear itself in time if freed from all agitation; but the time may be long—in fact some colloidal matters may never settle out. The time may be greatly shortened and a greater purity obtained by applying a coagulant. This of course increases the immediate cost, but is most economical if all costs are taken into account, to say nothing of satisfactoriness to the consumers. The muddying of the water may even prove advantageous in that the suspended matters, in settling, carry down with them a large percentage of the disease germs present. If we filter the water we remove a much larger percentage of the disease germs, but for muddy water, previous sedimentation is very desirable.

The entire world has experienced the most violent and protracted storm of history, and the social and industrial life of every nation has been stirred to the depths, is still in a very unsettled condition and needs clarifying greatly before peace and safety can be enjoyed again. The weightier matters have settled, or are being settled at Paris; but the waters are still muddy and will clear very slowly if the clarification be not assisted by the application to all parts of some coagulant. For a coagulant the experts recommend work as the most promising. The "idle rich" have fallen into foolish and vicious ways, not so much because they are rich as because they are idle. The idle poor also fall into foolish and vicious ways, different in their nature but even more serious because of the greater number of individuals in the class. Given sufficient work and the waters would clear rapidly and the national life resume its peaceful and healthy development. The immediate cost of supplying the work may be greater than if matters be left to adjust themselves, but in the end such action would make for economy, even though the cost of applying the remedy now be unusually high.

It is not only the unsettled condition of life and the business world that needs attention. The germs of disease have grown abundantly and threaten a most serious epidemic of Bolshevism, I. W. W.-ism and other plagues. By applying the coagulant of work we may remove the greater part of this danger, only a few of the most virulent specimens not responding to this remedy. Such specimens are being removed by the filtering process of the Department of Justice. More than fifty are awaiting deportation today at Ellis Island and it is reported that more than seven thousand have been entangled in the schmutzdecke and will be given similar treatment. But the work of removing these virulent germs will be greatly simplified by first clarifying the water.

The above is not a mere play upon words; it is the sober—very sober—truth. Hundreds of thousands of men are reported to be without work in all sections of the country except the South. Agitators, mostly of foreign origin, are taking advantage of conditions to carry on a propaganda that is avowedly aimed at the very life of the country. If this is to be suppressed, every effort must be made to remove reasons of discontent, and the most potent of those reasons is enforced idleness.

If every man of an idle half-million be paid $3 a day for even useless work, the cost would be less than half a billion dollars a year—an enormous sum, but insignificant compared to the loss this country would suffer if conditions here should even approximate those in Russia, the model of the Bolsheviki. But such work need not be useless. Every city has public work that needs to be done. Even though some money could be saved by waiting for lower prices, money is also being lost through the need of new pumping machinery, repairs to streets, and full efficiency in other public utilities. Moreover, we owe it to our returned soldiers that they suffer no uneasiness as to their future, but that work be provided for them at once. And above all we owe it to our country, to ourselves who are the country, to clear the troubled waters and aid in suppressing the agitation that threatens serious consequences. In this work the cities have a most important duty to perform. And America expects every city to do its duty.

SEWAGE TREATMENT IN NEW YORK.

Every city has some sewage disposal difficulty peculiar to itself, but few are confronted with a more serious one than Manhattan borough of New York. Three million people on a small island, every foot of which is held at enormous valuation and most of which is already built upon, contribute an enormous amount of sewage the only outlet for which is into rivers and a bay already grossly polluted. To obtain land sufficient for even the most compact of modern sewage treatment plants is out of the question without going off the island. One difficulty of locating such a plant in one of the other boroughs is illustrated by the garbage reduction plant on Staten Island (Richmond borough of New York), the construction of which was fought continuously in the courts and which, now that it is constructed, has been prevented from operating, at least temporarily. No borough will, without a fight, permit any of its area to be used for the disposal of sewage from another borough.

If it can not take the sewage off the island for treatment and cannot use private land on the island for that purpose, there appears to remain only public lands—the parks and streets. And, the use of the surface of these being out of the question, the possibility of sub-surface plants is being studied. One such plant has been built, as is described in this issue, and is being tried out by operation during the eight hours of strongest sewage each day.

One of the most serious difficulties with a screening plant, we anticipate, will be disposing of the screenings. The total amount of screenings and grit from the combined sewage of three million people would be appalling in its volume. The disposing of this on the island would seem to be impracticable, and possibly the only solution will be dumping them far at sea. The efforts at solving New York's problem will be watched with interest by sewage engineers the world over.

The WEEK'S NEWS

Proposed New Federal Aid Road Plans—Indiana's New Hig hway Program—Reduction of Veneral Disease in the Army—England's National Health Ministry—Pennsylvania Tow ns Refuse to Pay for Water—Omaha Cuts Water Rates—Secretary Lane Proposes Big Power Development Plan—New Jersey Police and Firemen Urge Pension Legislation—San Francisco Official Records Must Be Shown to Public—Proposes Tax on Mortgages in New York State—No Six-Cent Fare in Houston.

ROADS AND PAVEMENTS

Federal Aid Law Modified in Post Office Bill.

Washington, D. C.—The following clauses appear in the Post Office Department Appropriation Bill for 1919-20 by the Senate Committee on Post Roads: "Section II of the federal aid road law of 1916 is to be modified so that a post road is interpreted to mean any public road which is now used, or may be made suitable, for the transportation of the United States mails, excluding roads through places with a population of 2500 or more where the houses average less than 200 feet apart. The amount of federal aid in the 1916 law is to be increased by $50,000,000 for the current fiscal year, $75,000,000 for 1920, and $75,000,000 for 1921. Honorably discharged soldiers, sailors and marines are to receive preference, other conditions being equal, when labor is hired for the roads on which these additional funds are used. War material not needed by the War Department but suitable for highway improvement, is to be transferred to the Secretary of Agriculture at the discretion of the Secretary of War, and to be then distributed among the state highway departments for use in federal aid road construction and national forest roads, in the same manner as federal aid funds are now distributed. Appropriations of $3,000,000 annually for the fiscal years 1920, 1921 and 1922 are to be made for cooperative or independent construction of roads in the national forests."

New Indiana Highway Program.

Indianapolis, Ind.—The revised bill for a state highway commission, to have charge of the construction and maintenance of a system of state highways, has been introduced in the senate by senator Luke W. Duffey, of Indianapolis, and in the house by representative Oliver Buller, chairman of the roads committee. The measure is a substitute for the 1917 law, upheld in the state supreme court recently. It makes certain changes from the bill first prepared to meet criticisms as to the great power given to the director, who under the original bill, critics contended, would have had more authority than the state highway commission naming him. The new draft, like the old one, provides for the laying out at the earliest possible moment of "a system of state highways which shall reach each and every county seat of the state and and each and every city or town of over 5,000 inhabitants." Decision as to which part of the system shall be built first is left with the highway commission in the present bill, instead of the provision in the earlier draft that it should be made by "the director with advice of the commission."

The road-building program outlined by those behind the bill would call for a system of 3,500 miles under state control to be in shape at the end of five years, to be paid for out of a state road fund, supplemented by federal aid. Provision is made for taking advantage of the federal road aid act. Under this there would be available $1,500,000 accrued during the last four years; $600,000 to be available during the next year; and if pending legislation passes in the congress, $14,000,000 more in the next five years, the federal payments all being conditioned on the meeting of certain requirements by the state. The state highway commission, it is provided, shall consist of four members, not more than two from the same political party, to be named by the governor for terms of one, two, three and four years, respectively. Successors thereafter would be appointed by the governor for four-year terms. The governor would be empowered to fill any vacancy in the commission and remove any member "after a hearing, for cause." Members of the commission would serve without pay, but would receive actual expenses incurred in the performance of their duties. The bill specifies that the director shall be chosen by the commission "solely for fitness, irrespective of political beliefs or affiliations" and it is provided that he "may be removed by a majority vote of the commission for inefficiency, malfeasance or neglect of duty, after notice and hearing by the commission." The director is to be the executive officer of the commission and in the bill it is set forth that he "shall be subject to the orders and direction of the commission." His salary is fixed at $6,000 a year, exclusive of actual traveling and other expenses incurred in the performance of his duties. With the approval of the commission, he is to have power of appointment and removal over all subordinates. The measure directs that all employes shall be appointed for merit only and that "any undue political activity on the part of any employe, or inefficiency or neglect of duty shall subject such employe to removal." The work of the state highway commission is to be carried on under three divisions, construction, maintenance and auditing with a chief engineer, a superintendent of maintenance and chief clerk, respectively, at the head of each.

If any state highway to be constructed or reconstructed connects at the corporate limits of any city with an unimproved street, the commission would have power to improve it as a part of the state highway, and where the expense per mile of such work is greater than the average expense of improvement of such road outside the corporate limits, the extra expense would have to be paid by the city or town to the state highway fund.

The commission in laying out its state highway system would have power to deviate from the location of a public highway as actually traveled at the time the highway was designated as a state highway under the act "in order to shorten distance, to eliminate steep grades or sharp turns, to widen narrow portions or otherwise promote public convenience and safety." Such parts of a public highway are to be abandoned as a public highway unless the board of county commissioners where the road is situated petitions the highway commission and indicates that it desires to maintain the thoroughfare affected.

Provision is made in the bill that when it is proposed to improve any road, other than a state highway, the cost of which is estimated to be more than $2,000 a mile, or to construct or repair any bridge, cost of which is estimated to be more than $2,000, fifty or more electors in the district to be assessed for the improvement may have the plans and specifications submitted to the state highway commission and no contract may be made for the improvement until the state highway commission has approved the plans and specifications. On a petition by a similar number of electors, provision is made for the state highway commission to assign a representative to inspect the work as it advances and no payment for the work would be legal without his certification that material and work were in accordance with plans and specifications. Provision is made for reimbursement by the board of county commissioners to the state highway fund for the expense incurred in giving such service.

To provide money for the new state highway department and for road building, the bill introduced creates a state highway fund to get all money now in the highway fund, all proceeds of the inheritance tax, all money paid into the state treasury after July 1, this year, collected as motor vehicle registration fees, and all fees for examining and licensing chauffeurs, together with proceeds of a state tax of 10 cents on each $100 of taxable property.

Seven-Ton Vehicle Traffic Limit.

Houston, Tex.—Heavy truck traffic which has caused much damage to the county roads, particularly since the recent heavy rains, is the subject of an order by the county commissioners' court. The new order limits the weight of trucks and load to seven tons. The order assesses a fine of $25 or a jail sentence for violation of the order. At the same time county judge Chester H. Bryan was instructed to take up with the commanding officers of the army camps the matter of limiting the speed at which army trucks shall move over the county roads. Much of the damage to roads, particularly to the Webster Airline road, has been done by heavily laden army trucks moving at high speed. The commanding officers will be asked to issue an order fixing the maximum weight of truck and load to seven tons.

SEWERAGE AND SANITATION

Venereal Disease in the Army.

Washington, D. C.—The following statistics have been issued by the Surgeon General of the Army to show the need of carrying on in civilian life the work so successfully inaugurated in the military service. During the fifty-three weeks ending September 27, 1918, there have been 178,204 venereal disease cases reported under treatment in the United States army in France. Reports indicate that approximately 85 per cent of this number entered the army already infected, and that approximately 15 per cent of all cases reported were contracted after enlistment. During 1917 over three-quarters of a million days were lost to the army because of venereal disease. During these fifty-three weeks there had been a loss of over 2,067,000 days. Coincident with the introduction of preventive medical measures, systematic inspections, and prophylaxis, the annual venereal disease rate dropped from 155 per 1,000 in 1910 to 83.60 per 1,000 in 1915. These were practically all new infections, as men infected with venereal disease were refused at that time admission to the regular army. Under the Surgeon General's program as outlined, the venereal disease rate per 1,000 in the United States (new infections) has dropped from 83.60 per 1,000 in 1915 to approximately 20 per 1,000 in 1918. In the American Expeditionary Forces the annual venereal disease rate has varied from 20 to 40 per 1,000. Many of these cases are traceable to the French licensed houses of prostitution, which have now as far as possible, been placed out of bounds to the United States troops.

State Engineer Declares Disposal Plant Inefficient.

Madison, Wis.—That Madison's sewage disposal plant was not constructed according to the plans adopted, and the recommendations of the consulting engineer, and therefore is not the success it was designed to be, is the substance of a report of W. G. Kirchoffer, consultant sanitary engineer of the state board of health. Mr. Kirchoffer was detailed to study the sewage disposal plant with special reference to the pollution of Lake Monona. In the report, Mr. Kirchoffer details how and where the plans were ignored and the effect of the changes on proper disposal of sewage. Among the points brought out were the following: The plant was not completed in respect to an important settling basin which was to finish the process. The disposal of sludge was not carried out in a scientific manner and is merely a makeshift. The septic sludge passed through the plant and was found in each stage, even in the final effluent. Sludge from the moat about the sprinkling filter, even when mixed with 100 parts of lake water, has little or no stability but is still in a putrefying state. Floating sludge in the moat when mixed with 100 parts of water has a stability of only 50. Pollution of the lake by sewage disposal plant is considered as only one of the many causes of this nuisance. The report recommends that the city complete the sewage disposal plant to conform to the consulting engineer's recommendations and make a thorough examination of all sources of pollution contributary to the lake. Discussing the possible cause for the odors about Lake Monona the report says: "Inasmuch as no chemical or biological investigation was started when the nuisance was the worst, no one who has not thoroughly investigated all the sources of pollution of the lake, and there are many, at the time when they were in evidence, can now say that the cause of the odors was algae, sewage or something else. It is as feasible to suppose that some of the sludge which follows the effluent to the lake is responsible for part of the odor, as to say it is algae. This sludge could settle to the bottom of the lake, ferment in the hot sun, be thrown out on the shore by the waves, there to continue its process of putrefaction. If such conditions have taken place, especially while the filter was unloading in the spring, or during the time the moat was cleared out, it is, in my opinion, the only way in which the effluent from the plant could have caused the odor. If the supernatant liquid from the sludge tanks or the liquid from the settling tanks, when cleaning them, was turned into the lake, these probably would cause an odor, but as this procedure is not continuous it could hardly be expected a nuisance would prevail from this source. Complete chemical and bacteriological examinations into the other cause of offensive odors of Lake Monona have not yet been completed, as the work was started too late in the year to attempt all of it under favorable conditions. Moreover, the laboratory was overcrowded with work. In summing his conclusions as to the sewage disposal plant, the engineer says: "From these investigations, I concluded that the sewage disposal plant is not operating as intended by the consulting engineer, or as it should be, first, because the details of the plant were not properly designed and constructed and, second, because the plant is really not completed, so far as sludge disposal is concerned, or a final settling basin provided. It is my opinion that, had the plant been built according to the recommendations of Mr. Alvord, it would have been highly satisfactory for conditions." The report has been sent to city engineer E. E. Parker at San Diego, Cal., to Alvord & Burdick at Chicago and M. R. Howson at Camp Grant, engineer for the Chicago firm. Mr. Parker will make a thorough study and prepare recommendations for the city.

British National Health Ministry.

London, England.—Dr. Christopher Addison, President of the Local Government Board, has been entrusted with the establishment of the British Ministry of Health. In outlining the work to be done by the new Ministry, Dr. Addison says: "It will be a few months before the Ministry of Health can be established. For many purposes affecting the service the administrative unit must be a large one. A small area cannot possibly be self-contained, in a medical sense. It cannot have resources sufficient to meet all its emergencies. What we seek to establish is really a medical intelligence department. It will have its laboratories with everything necessary for research, and will have access to all information gathered by public medical officers. It is frequently possible to see an epidemic in the distance. We shall soon look to our Intelligence Department to give us due warning of the approach of anything of the kind, and to advise us as to our counter-offensive."

WATER SUPPLY

Towns Refuse to Pay Water Company Bill.

Media, Pa.—Fifteen boroughs and townships were represented at a meeting in Prospect Park, when the commissioners and councilmen decided by a resolution adopted not to pay the water bills submitted to their respective municipalities by the Springfield Consolidated Water Company. The public service commission some time ago made a ruling giving the water company the right to assess the boroughs and the townships the sum of $355 per mile for

every mile of four-inch pipe or over run through the boroughs or townships. The township and borough authorities objected, because it will mean that every one of the municipalities in Delaware County will be forced to increase their tax rates from two to two and a half mills. The boroughs also decided to pool their interests and to engage counsel to carry the case to the Supreme Court of Pennsylvania. The townships and boroughs contend that the ruling of the public service commission is arbitrary and unconstitutional. Springfield township, a farming district, has many miles of pipe running from the water company's works to the consumers in the different townships and boroughs, but has no fire protection. However, this township under the ruling of the commission must pay to the water company between $6,000 and $7,000 as potential fire protection. Clifton Heights, Lansdowne, Aldan, Prospect Park, Norwood, Darby, Sharon Hill, Ridley Park and Yeadon were some of the boroughs represented at the meeting, together with Upper Darby and Haverford townships.

City Water Supply Practically Exhausted.

Wauseon, O.—This town's water supply is reported to be practically gone. No deep well water is being pumped through the mains. The water is now taken wholly from ditches and ponds and is unfit to drink without boiling. The people must rely on private wells to furnish them with drinking water. Many of these wells have been pumped dry. On one day a large tank of water was placed in Wauseon's main street and was labeled, "This is deep well water. Help yourself." Members of the water works board are considering the plan of obtaining water from Bean creek or Maumee river, which would necessitate the construction of a pipe line nine or ten miles in length.

Water Rates Reduced.

Omaha, Neb.—The price of water in Omaha has been reduced 5 per cent., effective Feb. 1. The reduction was voted unanimously at a meeting of the Omaha water board after the excellent showing of the year 1918. The reduction applies to all water consumers who pay the 26¼ cents per 100 cubic feet basic rate. There is at present a 50 per cent. reduction on this rate. The additional 5 per cent. will bring the net rate down to about 12½ cents per 100 cubic feet. "This is the eighth reduction that has been made in water rates since the city took the plant in the summer of 1912," said assistant general manager Larmont. "About 95 per cent. of the water consumers of Omaha will benefit by the new reduction. It does not apply to the big consumers, who constitute only about 5 per cent of the total number The Metropolitan Water district did more business last year than ever before. This is attributable to the natural rapid growth of Omaha." A new 30,000,000-gallon centrifugal pump is now being installed at the water plant in Florence, greatly increasing the capacity. At present there are two pumps pumping water from the reservoirs to the city mains, one of 20,000,0000 gallons daily capacity and one of 18,000,000 gallons. Four pumps lift the water from the river to the reservoirs. These have capacities of 30,000,000, 20,000,000, 12,000,000 and 10,000,000 gallons respectively.

STREET LIGHTING AND POWER

Enforcement of Lower Rate Restrained.

Albany, N. Y.—The Municipal Gas company, with the backing of a temporary order of the Supreme Court, has put into effect the $1.30 rate per 1,000 cubic feet of gas, beginning Feb. 1. Carl H. Graf, the head of the gas company, has issued a statement setting forth that the "company will enforce the $1.30 rate immediately." He stated, however, that the higher rate would apply only to gas consumed from Feb. 1 and will therefore not be charged in any bills for January gas. Justice Hasbrouck at Kingston granted a temporary injunction restraining the city of Albany, state of New York and public service commission, second district, from interfering with the gas company in putting its higher rate into effect. The gas company gave a bond of $1,000 to cover costs, in addition to the $100,000 bond filed by the company some time ago to reimburse consumers for excess charges should the company ultimately lose its fight for the higher rate. The higher rate will continue until a further order of the court. The company's contention is that the law of 1907 fixing the $1 rate is confiscatory in that gas can no longer be manufactured and sold at that rate without a loss, and that the law is therefore unconstitutional.

Secretary Lane for Comprehensive Power Development.

Washington, D. C.—Predicting a greatly increased demand for power for use in industrial activity and expansion, Franklin K. Lane, Secretary of the Interior, has submitted to Chairman Sherley of the House Appropriations Committee a request for an appropriation of $200,000 to be spent in making a special investigation and report on the power supply of the whole industrial region between Boston and the city of Washington. Mr. Lane says that the investigation will form the basis for a constructive national policy of the highest industrial and economic significance. In his letter, Mr. Lane says:

> The country is passing through a period of transition, which, I firmly believe, will soon be followed by one of industrial activity and expansion. The enormous development of war industries created an almost insatiable demand for power, a demand that was overreaching the available supply with such rapidity that, had hostilities continued, it is certain that we should now be facing an extreme shortage of power. Such a crisis was averted by the signing of the armistice and the ensuing curtailment in the demand for war materials has carried up past immediate danger of a power famine in the industral districts of the Northeast.

One suggestion for a system of power supply which Secretary Lane favors is that steel tower transmission lines be constructed extending from the city of Boston westward past Worcester and Springfield, crossing the Hudson River in the vicinity of Newburgh or Poughkeepsie, and then swinging southwest to Northern New Jersey and across the Delaware somewhere near Easton, crossing Southeastern Pennsylvania, inland from Philadelphia, striking the Susquehanna River below York, and then extending southeastward into the vicinity of Washington. It has been suggested that such a trunk line could be tied to the existing power stations in Boston, Worcester, Springfield, Hartford, Poughkeepsie, New York City, Newark, Paterson, Trenton, South Bethlehem, Philadelphia, Wilmington, Chester, Harrisburg, York, Lancaster, Baltimore and Washington. Through such an inter-connection of existing large power stations, experts believe, a much higher efficiency can be obtained from existing power equipment, by taking advantage of differences in load conditions to obtain more complete use of the power equipment. In the region between Boston and Washington there is power producing machinery capable of 8,500,000 horse-power, half of which is in industrial plants and the other half owned by public service corporations and electric railways. This equipment is being increased by from 500,000 to 1,000,000 horsepower annually. Secretary Lane's idea is that these additions of new equipment should be made in harmony with a comprehensive plan of power production to be determined upon in advance and followed in such manner as to bring into use the undeveloped water power as soon as possible. Mr. Lane writes:

> In a few months, and especially in the regions mentioned, I anticipate a greatly increased demand for energy, for which present facilities are inadequate. This demand will follow the resumption of industry under the operation of normal economic laws and in the face of international competition, factors that have been largely inoperative during the war. If the country is to reap the full benefit of this returning wave of activity it must be prepared to furnish industry and transportation with an adequate, dependable, and economical power supply. Only by increased economy in the production and distribution of power will it be possible for our manufacturers to decrease their production expenses and compete successfully in the world's markets, maintaining at the same time the American standard of wages and living.

"This result will be accomplished by the inter-connection of existing power centres with a trunk line transmission system of high efficiency. Into this trunk line, energy will be fed from hydro-electric plants and steam power sta-

tions located at tidewater and near the coal mines. From it will be taken the power required for each principal industrial centre and for the electrification of trunk line railroads and of such branch lines as may be located in metropolitan districts. Such a comprehensive system of power supply, making use of unutilized or undeveloped water power and of fuel now wasted at the mines, will result in large savings in coal. A very large amount of coal now consumed by steam power plants can be replaced by the development of water power. Fuel power can be developed near the mines and the wasteful transportation of coal by railroads to that extent avoided.

I am reliably informed that as a conservative estimate 50 per cent of the fuel now used by the railroads in this territory can be saved through the operation of trains by electricity instead of by steam locomotives, because of the much higher efficiency that can be obtained in the economical central station in comparison with the wasteful steam locomotive.

The transmission of this energy as electricity instead of the hauling of coal by rail will relieve the railroads of this territory of an enormous freight burden, thereby making available transportation for the hauling of other commodities. Not only would the railroads in the immediate territory be relieved of hauling the coal for their own locomotives, but other railroads supplying them with coal would be relieved proportionately. This easing of the present strain on trackage and equipment would result automatically in an increase in transportation facilities, the necessity for which the country is now facing."

FIRE AND POLICE

Police and Firemen Present Pension Bill.

Trenton, N. J.—The joint committee of policemen and firemen of the state recently appointed to prepare a pension bill for the two departments agreed on the form of bill they want to present to the legislature. The form of the new bill calls for the two per cent payment by the members as at present, but increases the tax on the city to four per cent, or double what is being paid now. It also calls for the city to make up any deficiency that may at any time arise in the fund, if at all. In return the two funds will relinquish all claims on revenues which they are now receiving, and accumulated surplus from those revenues, fines of members alone excepted. The benefits under the new bill will be the same as now, except that benefits to parents will be eliminated, the widow alone becoming a beneficiary, except when there are dependent children. Where there is one child and the mother is dead, or remarries, the allowance will be $25 a month for the child, $40 for two children, and the present amount for three or more until the youngest reaches the age of sixteen. The widow's pension ceases at remarriage. A hard fight was put up by some of the members of the committee to try and have the maximum amount of a yearly pension placed at $1,000, but it was voted down, the firemen particularly opposing it. There was also a fight against widows of retired policemen or firemen being allowed to drew a pension equal to half of the husband's pay after his retirement, but the friends of the women were again in the majority. Action of the committee followed the organization of opposition to the Pierson measure on the subject. Meetings were held which adopted resolutions against the Pierson bill. They received support by city officials in a number of cities. The men believe that the new bill should be drafted along the line of the present police and fire pension laws, with slight modifications. Under the present law the men pay two per cent of their salary to the support of the fund, and the city contributes a like amount. Under the proposed bill the city's assessment will be increased to four per cent, but the aggregate amount the city will have to pay under the proposed new law, it was claimed by the committee, will be about $10,000 less the first year than the amount paid by the city last year. This will be brought about, it was explained, by the fact that both policemen and firemen under the new bill will receive nothing from many revenues in which they now share, including licenses of various kinds, fines, etc. These things, under the new bill, will go direct to the city treasury. The only revenue the two bodies' fund would have, in addition to the percentage tax on the members and on the city, would be that derived from fines imposed on their own members for infractions of department rules. The following constituted the committee which drafted resolutions voicing the protest of policemen and firemen of the state: Henry Gourley, president of the State Patrolmen's Benevolent Association; Robert Campbell, president of the State Firemen's Mutual Benefit Association; chief of police Long, of Newark; inspector Corbally, lieutenant John A. Brady, secretary to the committee; George Steele, secretary of the State Firemen's Mutual Benefit Association; Edward Davey, secretary of the State Patrolmen's Benevolent Association; fireman Thomas Plunkett, of Hoboken; fireman Charles Duffy, of Newark, and fireman James Donohue, of Jersey City.

Two Platoon System Installed.

Lima, O.—The double platoon system has been inaugurated in the fire department announcement by safety director E. W. Hiner. The plan which has been worked out by Hiner and fire chief Mack provides for two platoons of firemen, one of which will be on duty, while the men off duty will be subject to call in case of emergency. The day shift will be of ten hours' duration, from 7 a. m. until 5 p. m., the night shift being on duty the remainder of the twenty-four hours. The shifts will change from night to day once a week. Under the new system the firemen will not be allowed any full days off duty, will not be given time off at meal hours and will not be allowed a two weeks' vacation annually. Men working on the day shift must either carry their dinners to the station with them or have them sent to them. While in the past the men have been given meal hours, one day off in six and a two weeks' vacation with pay each year, it is estimated that the firemen will have as much or more time to themselves under the new platoon plan. Every man in the fire department will be assigned definitely to one or the other of the two platoons. It will be forbidden for him to trade shifts with another man. A substitute must be provided in case any fireman secures a leave of absence, while the absent fireman will not be allowed pay during the time that he is away from duty. All firemen in the department have been ordered to install telephones in their homes, so that they may be reached at any time in case of an emergency. No man hereafter may leave the city without first notifying chief Mack. In the opinion of safety director Hiner, the new plan will do away with the unsettled conditions which have prevailed in the department during the past few years. Under the old system, he stated, it has been possible for men to be absent from duty without the knowledge of the chief as there has been no effective means of knowing the whereabouts of each man at all times. While the introduction of the new system is not final, the plan will be given a thorough trial and if it proves successful, the city council will be called upon to enact the legislation necessary to make it effective.

GOVERNMENT AND FINANCE

Official Records Must Be Shown to Research Bureau.

San Francisco, Cal.—The secrets of the Hetch-Hetchy water projects must be thrown open by city engineer M. M. O'Shaughnessy and the board of public works for inspection by the San Francisco Bureau of Government Research, by virtue of a writ of mandate issued by superior judge George E. Crothers. The research bureau won a fight that started more than a year ago when W. B. Holton, at that time director of the bureau, asked for and was denied permission to inspect the data and records involving Hetch-Hetchy. O'Shaughnessy told Holton to go to the board of public works. The board told him to go to the mayor and the supervisors. The mayor and the supervisors, by a vote of 14 to 2, told the director he'd have to go to the courts for satisfaction. The bureau went to the courts. The Civic League of Improvement Clubs got behind it in its fight. The bureau stood on

the right of any citizen to see any records of the city. The bureau has now won its fight. Judge Crothers held that any citizen has a right to inspect any public data except those prepared for use in defending the city against a lawsuit. By Judge Crothers' decision, engineer O'Shaughnessy and the board of works must throw open to public inspection all the records and data of the entire Hetch-Hetchy project. Even without the benefits of O'Shaughnessy's records, Holton announced that the research bureau would continue the investigation of Hetch-Hetchy it has started. He said the project itself, without any of its attending data, furnished room enough for a long investigation. At the time O'Shaughnessy appeared before the supervisors to defend his refusal to permit inspection of the work, the city engineer is reported to have said: "We can't afford to have the city's great works investigated by every Tom, Dick and Harry you pick up on the sidewalk—every man who may have built a sewer in Portland or a manhole in Manila." O'Shaughnessy was asked to come to a meeting and answer questions about Hetch-Hetchy. O'Shaughnessy is reported to have said, he was willing, provided the league appointed a committee and agreed to hold the interview behind closed doors. Then the board of public works wrote to the Civil League that it was willing to permit its members to inspect "completed" records of O'Shaughnessy, who was to be the judge whether or not records were completed. Throughout the arguments the city authorities took the position that agencies that might be opposed to the Hetch-Hetchy project, and therefore might criticise it, should not be permitted to inspect its records.

Economy Regime for San Jose.

San Jose, Cal.—In order to get city expenditures within the budget allowances, sweeping reductions in the health and police departments have been ordered by the common council and half of the street lights have been ordered out. The rule was effective February 1. Joseph Lazier, city sanitary inspector and four members of the police department, are to be cut off the pay roll. W. C. Bailey, the city manager, will contribute $150 a month of his salary temporarily to the expenses of the health department, which is spending slightly more than the budget allowance, on account of the influenza epidemic, now practically under control, however. There will be no effort to save money by cutting down the personnel of the fire department, it was announced.

Virginia Has "Complaint Box."

Richmond, Va.—Governor Westmoreland Davis has installed a "suggestions and complaints" box in his office. It is in connection with the budget division of the executive office and will be administered by the budget assistant, an office for which the new Virginia budget law provides. The governor has announced that he wants suggestions, complaints, and criticisms from any citizen regarding the affairs of state, and especially invites them from state officials and employees. He says he is determined that state affairs shall be administered as efficiently and economically as possible under present conditions and that they shall respond fully to the will of the people of Virginia. Persons with suggestions regarding the manner in which the state's government could be bettered and those who have a "kick" to register have but to place them in writing in the complaint box and they will be investigated. If it is found that the state's service can be improved, the governor says the suggestions will be followed up and credit given to the person who offered them. Last Feb. 19, less than three weeks after Governor Davis had taken office, on a programme calling for an "Executive budget," the new budget law was enacted by the legislature, establishing complete coordination of revenues and expenditures of the state, and insuring greater executive supervision and control of all state affairs. Every two years, under the new law, the governor is required to make a careful survey of all state departments and institutions in order to possess a working knowledge on which to base his recommendations to the assembly. Within five days after the beginning of the session of the general assembly, the governor must submit his budget, together with a general survey of the state's financial resources and a review of the general economic, industrial, and commercial conditions. This must be accompanied by a tentative budget bill. Within five days the committees in charge of appropriation measures of both houses must sit jointly to hear appeals, the governor having the right to be heard on all matters coming before the committee. The assembly may increase or decrease items in the budget bill. Additional or special appropriation bills may not, however, be considered except in case of emergency, by either house until the budget bill has been finally acted upon. All special bills introduced must be itemized in accordance with the classifications used in the budget. This forces an early consideration of the budget; it directs attention to the condition of the treasury at the same time, and checks the flow of local and political appropriation measures until after the assembly has had an opportunity to consider and provide for the constructive business of the state.

Proposes Tax on Mortgages.

Albany, N. Y.—An annual tax on mortgages in place of the present antiquated recording fee is advocated by state controller Travis to increase substantially the state's revenues. In explaining this suggestion, the controller shows that the tax of $292,971 collected for the last quarter was at a rate so insignificant as to be merely nothing more than an exemption fee. "A few years ago," explained the controller in citing an example of how the present law works, "one of the largest corporations in the state issued $49,000,000 worth of bonds payable in 2361. The owner of one of these bonds can to-day take it to the county clerk's office where the mortgage was first reported and pay a tax of $5, procuring exemption from further taxation for the next 443 years. Can it be said that such a tax, which is slightly more than 1 cent per year for each $1,000 is in fact a tax? Afterwards, another corporation issued $94,000,000, due in 1997. By paying $5 on a $1,000 bond of this issue, it is possible for the holder to obtain exemption from taxation for the next eighty years. In that case the annual tax on $1,000 of personalty is approximately six cents. Moreover, as to bonds secured by a mortgage covering real property partly within and partly without the state, the owner has, by reason of the payment of the mortgage recording tax, an exemption for a portion of his bond, but the remainder thereof can be made tax exempt only through the Investment Tax law. Under the Mortgage Recording Tax act, a part of the bond is exempt for life; and under the Investment Tax law the other portion can be made exempt for not more than five years. No such a condition as that should exist. Put simply, the mortgage-recording tax is not a tax, as the rate is so insignificant that it can be characterized as nothing more than an exemption fee."

STREET CLEANING AND REFUSE DISPOSAL

To Sell Grease and Tankage in Open Market

Columbus, O.—Council has passed, and mayor George J. Karb has approved, an emergency ordinance authorizing the board of purchase to sell the products of the garbage reduction plant in the open market. According to the ordinance, bids were received January 13 by the board of purchase, for the sale of garbage grease and tankage produced by the garbage reduction plant and being unsatisfactory, all bids were rejected. Such material, says the ordinance, should be sold because of limited storage facilities. Council declares in the measure that better prices can be secured for grease and tankage by selling it in the open market, until such a time as market conditions improve and therefore the board of purchase is directed to offer garbage grease and tankage for sale in the open market and to enter into contracts for the sale of such quantities as they may deem advisable until conditions are such as to warrant again advertising for bids.

Ten Year Contract for Garbage Disposal.

San Francisco, Cal.—The board of public works has awarded the contract for the disposal of wet garbage to Charles F. Reddy. Reddy was the sole bidder for the garbage contract and will pay the city $1.26 a ton, amounting to about $50,000 a year. The contract was awarded following a conference between chairman Andrew J. Gallagher of the special garbage committee of the board of supervisors, city attorney George Lull and members of the board of works. The contract runs for ten years. Reddy will receive wet garbage at three receiving stations, according to supervisor Gallagher. The stations will be established at North Point, Islais Creek and at the end of Channel street. Consumption of the contract depends upon passage by the supervisors of an ordinance providing for the segregation of wet and dry garbage. Gallagher's committee is now working out plans to purchase garbage containers and sell them at cost. The committee is also seeking to establish uniform rates to be charged by scavengers.

TRAFFIC AND TRANSPORATION

6-Cent Fare Lost in Houston.

Houston, Tex.—The city administration has passed an ordinance eliminating the six-cent fare and restoring the five-cent fare, following the decision of the district court denying the petition of the Houston Electric Company seeking mandamus to force the commission to permit the railway to collect six-cent fares as provided in the city ordinance adopted last September. When the six-cent fare ordinance was passed a petition from the necessary number of voters was presented asking for a referendum on the question and at the election the higher fare was defeated by an overwhelming majority. The company took the matter into the courts, declaring that the commission had no authority to delegate its rate-making powers to the voters through the referendum—and the court decided against the contention.

St. Louis Wins Car Company Taxes.

St. Louis, Mo.—The city and the United Railways have reached an agreement on the question of the company's mill tax suits, amounting to $2,300,000. The United Railways agreed that it would pay every dollar that it owes the city in mill taxes, including both principal and interest, and, also, a judgment against the St. Louis Transit Company for about $250,000. The obligations are to be paid in ten installments, with interest, amounting to approximately $250,000 a year. The company also binds itself to pay the mill tax in the future without contest as it falls due. On April 4, 1903, a measure known as the mill tax ordinance became effective. This ordinance provided for a license tax of 1 mill per passenger on street railways doing business in St. Louis. The United Railways from the very beginning contested the validity of this tax and litigation between the city and the company ensued, which ended, in so far as the original cases were concerned, by a decision of the Supreme Court of the United States in 1916 in favor of the city. As the result of this thirteen years' litigation the United Railways Company paid into the treasury of the city approximately $1,800,000. No tax has since been paid under the ordinance. Immediately upon the final determination of the 6-cent fare case by the Supreme Court the mayor instructed the law department to proceed to collect, if possible, the balance of the mill tax, not in judgment, and which amounts, in round figures, with interest, to $2,500,000. Suit for the major portion of this amount has been pending awaiting the fate of the rate case and was also passed awaiting the result of franchise compromise ordinances and settlements which were being suggested and proposed from time to time. Accordingly, the city counselor made demand upon the company to file its answer in these cases so that steps could be taken by the city to force the tax claims under this ordinance to a judgment.

LEGAL NOTES

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Acquisition of Land by City—Construction of Street Railroad.

(Tex. Civ. App.) Vernon's Sayles' Ann. Civ. St. 1914, art. 783a, providing that cities on navigable streams and under special charters may extend their limits for the purpose of acquiring land for improvements of navigation, does not authorize a city upon passage of an ordinance thereunder to construct a steam railroad along a street included in such extended limits.—City of Orange v. Rector, 205 S. W. 503.

The owners of residence property abutting a street have the right to enjoin the city from constructing a steam railroad thereon without lawful authority, upon showing special damages to property and personal discomfiture, whether plaintiffs owned the fee to the street or not.—Id.

Limitation of Powers of Municipality.

(Fla.) If a reasonable doubt exists as to a particular power of a municipality, it should be resolved against the city.—Ex. parte Davidson, 79 So. 727.

A general clause conferring power upon a municipality can give no authority to abrogate the limitations contained in special provisions.—Id.

Where authority as to a particular subject is expressly conferred on municipalities, other authority inconsistent with the powers expressly given is not to be impled, particularly when the powers given do not include all the authority as to the designated subjects.—Id.

Land Used for Educational Purposes—Assessment.

(Cal. App.) A strip of land owned by a state university and adjoining land, used for educational purposes, cannot be subjected to street assessment lien, unless it is divisible from land used for educational purposes, and can be separated therefrom without impairing use to which such land is being put by university.—Raisch v. Regents of University of California, 174 P. 943.

A strip of land fronting on a street, and constituting about one-seventh of a block owned by a state university, six-sevenths of which was occupied by college buildings, held not separable from the remainder without impairing its use, and hence not assessable.—Id.

Land occupied by college buildings of a state university, being devoted to public use, is not subject to street improvement assessment.—Id.

Indebtedness Beyond Limit—Enforceable Contract for Purchase of Waterworks.

(U. S. C. C. A. Ky.) Const. Ky. § 157, prohibited a city from incurring indebtedness in any year beyond the year's income unless authorized by vote, from granting any franchise except to the highest bidder, and from incurring indebtedness beyond a fixed limit "except when authorized under laws in force prior to the adoption of this Constitution." In 1890 the city by ordinance granted a franchise to a water company for 20 years and agreed to pay a yearly sum for fire hydrants, and also before or at the end on the term to buy the waterworks at appraised value, or to extend the company's "rights and privileges" for 20 years. Held, that the ordinance constituted a contract binding the city to either buy or extend; that, having elected to purchase and have the property appraised, its contract was within the exception as "authorized" under prior laws, and enforceable, although it increased the indebtedness beyond the constitutional limit.—Ashland Waterworks Co. v. City of Ashland, 251 F. 492.

A constitutional provision prohibiting a city from incurring any indebtedness beyond a certain limit, unless authorized by a two-thirds vote at a special election, does not require such an election, where for any reason the proposed indebtedness is not within the prohibition.—Id.

NEWS OF THE SOCIETIES

Feb. 25-28, 1919.—AMERICAN ROAD BUILDERS' ASSOCIATION. Sixteenth annual convention and Ninth American Good Roads Congress under the auspices of the A. R. B. A., Hotel McAlpin, New York, N. Y. Secretary, E. L. Powers, 150 Nassau street, New York, N. Y.

Nov. 12-14, 1919.—AMERICAN SOCIETY FOR MUNICIPAL IMPROVEMENTS. Annual convention, New Orleans, La. Secretary, Charles C. Brown, Bloomington, Ill.

Lincoln Highway Association.

The board of directors of the national Lincoln Highway Association met in Detroit recently for their annual election of officers and to consider many questions which have arisen for the action of the board during 1918, and to lay plans for the 1919 season.

This was the first meeting of the directorate of the Lincoln Highway Association since the ending of the war, and the first one in two years at which it has been possible to secure the presence of a number of the men who have been most prominently identified with the work of the organization in the past, and who, for the duration of the war, had been engaged in governmental activities.

Henry B. Joy, who was for four years president of the Lincoln Highway Association and who resigned Jan. 1, 1918, following his entering the service, was present at the meeting and was unanimously elected vice-president of the organization for 1919. F. A. Seiberling, president of the Goodyear Tire & Rubber Company, under whose leadership as president of the Lincoln Highway Association so much tangible progress was accomplished in 1918, was unanimously re-elected president of the organization.

R. D. Chapin, president of the Hudson Motor Car Company, and who was for the duration of the war Chairman of the Highways Transport Committee of the Council of National Defense, was re-elected vice-president, as was Carl G. Fisher of Indianapolis and Miami, Florida.

Mr. Chapin brought out in his address to the board his belief that American public opinion was crystallizing upon the necessity for federal action in connection with construction of interstate highways like the Lincoln Highway, and that the war had in his opinion served to advance the enlightenment of the American public in connection with the question of highway improvement by more than a decade. Mr. Chapin predicted, as a result of the growing demand from every section of the Union for greater federal aid in connection with proper improvements, an early additional appropriation by congress, to supplement the money already available under the Bankhead-Shackleford Act for assistance to the various state highway departments. He also stated that he hoped a period of two years would see a law written upon the statute books of the United States providing for the laying out and constructing at government expense the main highways of the country, including the Lincoln Highway.

Mr. Seiberling stated that he felt that in two years every state traversed by the Lincoln Highway whose financial possibilities in any way allowed of the proper improvement of that route, would have taken care of the highway problem. He added that the Lincoln Highway Association itself was as rapidly as possible taking care of those situations in western states, where finances were inadequate to meet their own problems, and that two years more would practically see the elimination of the poor sections in Wyoming, Utah and Nevada by the expenditure of funds contributed to and administered by the association for this purpose.

In their report to the directors, field secretary H. C. Ostermann and secretary A. F. Bement brought out that $2,996,307.77 had been spent on the improvement of the Lincoln Highway during 1918 even in the face of the manifold difficulties presented by the war situation, an amount greater than expended in 1917 and which brought the total funds expended upon Lincoln Highway improvement since the organization of the association to $15,055,392.71.

The board elected for 1919 was identical with the previous board, with the addition of Mr. Alvan Macauley, president of the Packard Motor Car Company. The officers and directors of the association for the coming year will, therefore, be: F. A. Seiberling, president; Henry B. Joy, vice-president; R. D. Chapin, vice-president; Carl G. Fisher, vice-president; A. F. Bement, vice-president and secretary; H. C. Ostermann, vice-president and field secretary; Emory W. Clark, treasurer. Directors: Russell A. Alger, James A. Allison, Hon. Albert J. Beveridge, Henry F. Campbell, Paul H. Deming, A. Y. Gowen, Alvan Macauley, John N. Willys.

The Associated Highways of America.

Delegates from 37 good roads associations, each of which has a trail of more than 500 miles touching at least three states, held their first nation-wide conference on Jan. 22 in Kansas City, Mo., and perfected permanent organization, choosing "The Associated Highways of America" as the official title and electing C. F. Adams, president of the Pike's Peak Ocean-to-Ocean highway, as president.

Every state except Massachusetts was represented by delegates.

Resolutions setting forth the purpose of the new league were adopted. "A well defined and connected system of improved highways, in order to expedite the distribution of large volumes of foodstuffs, 50 per cent. of which now are wasted on account of the lack of prompt and adequate highway transportation, is one of the greatest ends to be sought," the resolutions say.

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PROBLEMS CITIES ARE STUDYING WITH EXPERTS

Aberdeen, S. D., is to build a SEWER SYSTEM to cost $200,000. The consulting engineers are Burns & McDonnell.

A SANITARY SEWER SYSTEM is to be built by the city of Aurelia, Ia., according to plans prepared by the consulting engineer, C. H. Currie.

Rock Island, Ill., is to make PAVING IMPROVEMENTS according to plans being prepared by the consulting engineer, W. S. Shields.

PAVING IMPROVEMENTS for which about $150,000 is available are to be made by the city of New Iberia, La., according to plans prepared by the consulting engineer, J. B. McCrary.

Pawnee county, Larned, Kan., has had preliminary surveys made for PAVING IMPROVEMENTS on the Santa Fe trail, involving paving with brick on concrete base, 23 miles long, 18 feet wide. The consulting engineers are Black & Veatch.

A complete SEWER SYSTEM is to be installed by Laredo, Tex. Plans are in course of preparation by the A. Jones Engineering Co.

WATERWORKS IMPROVEMENTS are to be made by the city of Bellefontaine, O., to cost $100,000. Plans have been prepared by the consulting engineers, W. J. Sherman Co.

Princess Anne, Md., is to build a WATER DISTRIBUTION SYSTEM, including tanks, pump and pipe, to cost about $60,000. The consulting engineer is L. J. Houston.

WATERWORKS and PAVING IMPROVEMENTS are contemplated by Gloucester, N. J., acording to plans prepared by the consulting engineers, Remington & Vosbury.

Plans are about completed for the construction of a BRIDGE over the Monongahela river, Fairmont, W. Va., 1,266 feet long, 56 feet wide, with 40-foot roadway. The consulting engineering firm is the Concrete Steel Engineering Co.

INDUSTRIAL NEWS

Protest Against Increased Freight Rates on Road Construction Materials.

Vigorous protest is being aroused by the proposed increase in freight rates by the Railroad Administration on necessary road-building materials in the Middle West. A hearing was held in Chicago Jan. 30, before the Central District Freight Traffic Committee, at which about four hundred representatives of the industries affected by the proposed rate action were present. The proposed increase is on sand, gravel, crushed stone and slag and is on a mileage scale with excess for two line hauls. The area which will be affected is practically that south of the Great Lakes and north of the Ohio River and extending east from the Illinois-Indiana state line to include the western part of Pennsylvania. The increases would range from 10 to 90 per cent, with the averages about 25 to 40.

That these increases would seriously curtail very necessary highway construction at this time when all possible public work is being urged by government officials, was the main reason for protest. "If it goes through," said S. E. Bradt, state highway commissioner of Illinois, "Gov. Lowden will hesitate a long time before he starts spending the $60,000,000 for good roads in Illinois." "We have a bond issue of $50,000,000 for good roads on which we will vote at the April elections," said J. H. Bateman, assistant highway commissioner of Michigan. "The freight increase will play havoc with our program."

"Here is the way I figure out the proposed rates," explained commissioner Bradt. "We will ship a ton from Janesville to Park Ridge, a distance of ninety-eight miles. The price was 30 cents until last June. Then the cost was raised to 50 cents, and now it is proposed to raise it to 95 cents.

"You can figure out how much that means in road construction when you estimate that 6,000 tons must be used to each mile. With the increase in rates last June the cost of the Illinois road program was raised from $60,000,000 to $64,000,000. This proposed raise adds on at least $4,000,000 more.

"Take a ton from Joliet to Springfield, 148 miles. It cost 53 cents until June, then 70 cents, and now it is proposed to make it $1.20. Another illustration is from Racine to Evanston, fifty-two miles. The increase was from 40 to 60 cents last June and the proposal is for 85. The raise from Joliet to Pontiac, fifty-five miles, is from 47 cents to 70 cents, and now to 85 cents."

Assistant commissioner Bateman from Michigan applied the rates to the construction of the Detroit-Monroe road, constructed last year. "The freight on the sand and gravel for this job cost $2,400 a mile before June, when the cost was increased to $3,200, and now it is proposed to make it $5,200," he said.

H. C. Barlow, representing the Chicago Association of Commerce, said that with the present federal direction of railways there is logically no such thing as a two-line haul, and the increased rate proposed over single-line haul is an absurdity. He said that present rates are excessive and unjust; they should be reduced and not increased. Other speakers condemned the mileage scale as a basis for fixing rates. Producers had established their plants and built up their markets on the old rate-making basis, and the change to a mileage scale would disorganize everything accomplished. Figures were presented by large producers showing that the new scale would increase the cost of shipments to their regular markets from 10 to 150 per cent. In some instances, it was asserted, the increase would completely exclude the producer from his best markets and might even force him to discontinue business.

Resolutions protesting against the proposed increases, which had been adopted by the National Crushed Stone association, were laid before the committee.

The legislatures of Ohio, Michigan and Indiana have passed resolutions of protest and these were read at the hearing by official delegates from these bodies. The Ohio legislature resolution, which is typical of the others, "respectfully but most urgently requests the president of the United States, congress, and the railroad administration to take such action as will immediately and effectively prevent an upward revision in the freight rates upon materials entering into the construction of public works."

Dale F. Stansbury, assistant attorney general of Indiana; O. P. Gothlin, of the Indiana public service commission; B. F. Affleck, of the United Federation of Construction Industries, and John M. Glenn, of the Illinois Manufacturers Association, were among the other speakers at the hearing.

National Crushed Stone Association.

The first annual convention of the National Crushed Stone Association will be held at the Iroquois Hotel, Buffalo, N. Y., Feb. 11-12, 1919. The association was formed in Chicago in February, 1918.

NEWS OF THE SOCIETIES

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A national highway system to be built and maintained in whole or in part by the national government also is to be urged, the resolutions set forth.

The movement was launched at the recent Chicago conference of the American Association of State Highway Officials and the Highway Industries Association. A temporary organization was then formed with Frank A. Davis of Kansas City, temporary secretary. These associations were represented: Yellowstone Trail Association, Lincoln Highway Association, Pikes Peak Ocean-to-Ocean Highway Association, National Old Trails Association, Jefferson Highway Association, King of Trails Association, Dallas-Canadian-Denver Association, Burlington Way Association, Daniel Boone Trails Association, Sunshine Highway Association, Albert Pike Highway Association, Mississippi Scenic Highway Association, Diagonal Trail Association.

New York State Conference of Mayors and Other City Officials.

Needed legislation affecting municipalities formed the principal matter for consideration at the mid-winter conference of city officials of New York state held under the auspices of the Conference of Mayors and Other City Officials at Albany, Jan. 20 to 22. President Walter R. Stone, mayor of Syracuse, spoke on the subject "Problems Which New York Cities Are Facing," and mayor Foster Studholme, of Olean, discussed the hydro-electric power bill proposed by the conference and which will be acted upon by the present legislature. The permissive municipal ownership bill was explained by mayor George S. Buck, of Buffalo. Another speaker was mayor Mark I. Koon, of Auburn, who spoke on municipal readjustment problems.

A round table discussion of taxation and revenue problems was the principal feature of the closing session.

The conference made public a statement signed by president Stone and mayor Cornelius F. Burns, of Troy, chairman of the conference's general legislative committee, which read in part as follows:

"The permissive municipal ownership bill which will be introduced in the legislature this week places a municipal utility on the same basis as a private utility by submitting it to the same regulations and affording it the same protection. After a most careful study of the utility problem we believe that this is the only effective way to guarantee efficient and economical service under either municipal or private ownership. If this bill becomes a law in substantially the same form as it is presented, we believe that any city which is not getting proper service from a private utility can either obtain or provide it. On the other hand as long as a private utility gives good service at reasonable rates, it can enjoy the protection which it must have in order to operate.

"To the public service commission is given the same jurisdiction over rates, service, issuance of securities, operation of a utility and keeping of accounts as it now has over municipal and private utilities. It, however, adds one feature not contained in existing laws affecting the regulation of utilities. By means of the initiative and

referendum the regulating body—the public service commission—is made amenable to public opinion.

"The procedure for acquirement, establishment, financing, maintenance, operation and control has been very carefully worked out so as to guard against

1. Hastily or ill-advised action by a municipality and its officials.
2. Unloading on a municipality by a private utility.
3. Collusion between public and utility officials.
4. Inefficient or costly service.
5. Improper management and financing.
6. Unjust attacks on private utilities which give good service at reasonable rates."

W. P. Capes, secretary of the conference, said: "The committee of experts and the Conference Advisory Committee have agreed on the fundamental principles of the measure, and all that remains is to work out the details. This will only require a short time. We are now seeking expert opinion on various tentative provisions in the bill, such as those dealing with the financing of a utility civil service regulations, condemnation proceedings, etc. Municipal ownership, or operation, or both, of utilities with state regulation, which will be amendable to public opinion, is the plan which the conference will present to the legislature. Through a committee of experts the State Bureau of Municipal Information and the Conference Advisory Committee have made a searching study of municipal ownership laws in the United States, as have learned the strong and weak features of each scheme and have worked out a plan which we believe eliminates all the weak points in laws now in effect and contains all of the strong features."

In general, the bill provides that upon petition of 20 per cent of the electors the municipal board of a city may ask for authority to undertake by purchase or condemnation or by construction the ownership of its own street railway or lighting system; or the petition may be for a referendum of the people to direct that such negotiations begin. The municipal board shall thereupon make what bargain it can with the public utility for acquisition of its property, or if it is unable to agree with the owners of the property it may recommend condemnation or the construction of a new system. Its decision, whatsoever it may be, with all the findings and estimates next goes to the Public Service Commission for approval or disapproval. If approved it goes back to vote of the people of the city.

Virginia Good Roads Association.

The eighth annual convention of the Virginia Good Roads Association was held at the Murphy Hotel auditorium of Richmond, Va., January 14, 15 and 16. The meeting was attended by good roads advocates from all over the state, numbering almost 300.

The opening address was by Governor Westmoreland Davis on "Future Highway Improvement in Virginia." The governor received an ovation when he proposed to raise $25,000,000 for the immediate construction of 1,200 miles of good roads in the state highway system by levying a special tax of one mill and increasing the automobile license rates 50 per cent. He declared that he wanted to be known as the "Good Roads Governor," and believed that since the war was over Virginia should address herself to the building of a great system of highways of a lasting character.

Governor Davis declared that at the rate we are going it would take sixty-five years and cost in original construction $75,000,000 to carry out the state highway program adopted by the General Assembly of 1918.

Fortified with carefully prepared statistical tables Governor Davis showed how under his plan a total of $39,000,000 could be made available for good roads construction and maintenance during the period 1920-28, of which approximately $12,000,000 would be for maintenance alone. He argued that during this period $22,000,000 would come from the mill tax and automobile licenses; about $4,500,000 from the Federal Government, even under the present "distinctly unsatisfying" system of Federal aid, and about $1,125,000 in convict labor. In 1928, he stated, under this plan, we would have the roads, with no outstanding debt, and the work could be continued indefinitely on the same basis if the people desired it.

Motor parcel-post routes were discussed by James I. Blakslee, Fourth Assistant Postmaster General.

At the afternoon session state highway commissioner G. P. Coleman spoke on "Ways and Means for the Construction of the State Highway System." He declared that the drafting of uniform traffic regulations was one of the most important problems facing the highway engineer today. "I would call your attention to the fact that it is the speed above fifteen miles per hour in moderate weight vehicles which does the damage to our light-surfaced roads," said the commissioner, who also expressed the opinion that fast-moving motor trucks would soon destroy not only the light but the heavy surfaced roads.

Commissioner Coleman declared that in order for the state to meet the necessities required by the Federal appropriation acts and to provide funds for resurfacing and reconstructing roads which are rapidly going to pieces we must have a special state road tax of not less than 1½ mills, or 15 cents on the $100, the tax to apply to all properties subject to state tax. This, based on the three-tenths mill tax, would yield $1,875,000, which amount, together with present Federal aid and convict labor, would amount to approximately $3,000,000; but there is every indication that Federal aid will be materially increased in the near future. With this increase we would have approximately $4,000,000 annually for highway construction.

R. B. Allport, of the Richmond Automobile Club, explained the attitude of the automobile owners toward highway improvement in Virginia.

On Wednesday morning "A State Bond Issue for Construction of the Highway System" was discussed by Roswell Page, second auditor. D. B. Pyland, manager, Lynchburg Chamber of Commerce, discussed "Should the State Tax for Construction of the Highway System Be Increased?"

In the afternoon "Health and Good Roads" was the subject of H. D. Griffiths, assistant epidemiologist, U. S. Public Health Service. Jesse C. Jones, director of co-operative extension work, State Department of Agriculture, spoke on the "Rural Motor Express." "Proper Regulations for the Use of Improved Highways" was discussed by W. S. Fallis, chief engineer of the North Carolina state highway commission.

The following papers were read on Thursday: "Prospects for Increased Federal Appropriations for Highway Improvement," by E. W. Saunders, member of Congress; "Methods and Cost of Construction to Withstand Modern Traffic," by Captain P. St. J. Wilson, chief engineer, U. S. Office of Public Roads; "Maintenance of Earth Roads," by S. L. von Gemminger, engineer of construction and maintenance, Virginia state highway commission.

PERSONALS

Bowe, Capt. Thos. F., Q. M. C., Construction Division, U. S. A., has been appointed chief of engineers, Port Utilities Office, Newport News, Va.

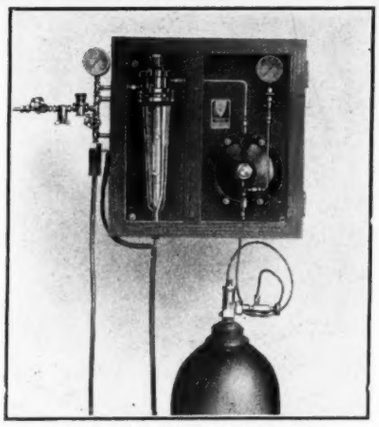
McInerney, Thomas D., recently of the engineering staff of the ordnance department, U. S. A., has opened an office for the practice of civil, mechanical and electrical engineering at 99 Chauncy street, Boston, Mass.

Hickok, Capt. C. E., until Jan. 1 attached to the office of the Chief of Engineers, U. S. A., Washington, D. C., has returned to his former position as city engineer of Alameda, Cal.

Starr, Ronald G., of Toronto, has been appointed engineer of the Orillia, Ont., electrical and waterworks plants, succeeding the late W. K. Greenwood.

Routly, H. T., head of the Routly Construction Co., Toronto, has been appointed by the Ontario Government construction engineer for the Provincial Highway, of which one hundred miles will be built this season.

Williams, A. D., chairman of the West Virginia State Roads Commission, has resigned in order to devote more attention to his personal business. Major C. P. Fourtney has been appointed to succeed him. He has had extensive experience in highway construction, in this country and in the Canal Zone at Panama.



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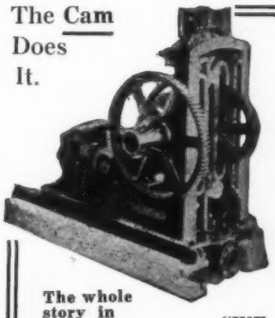

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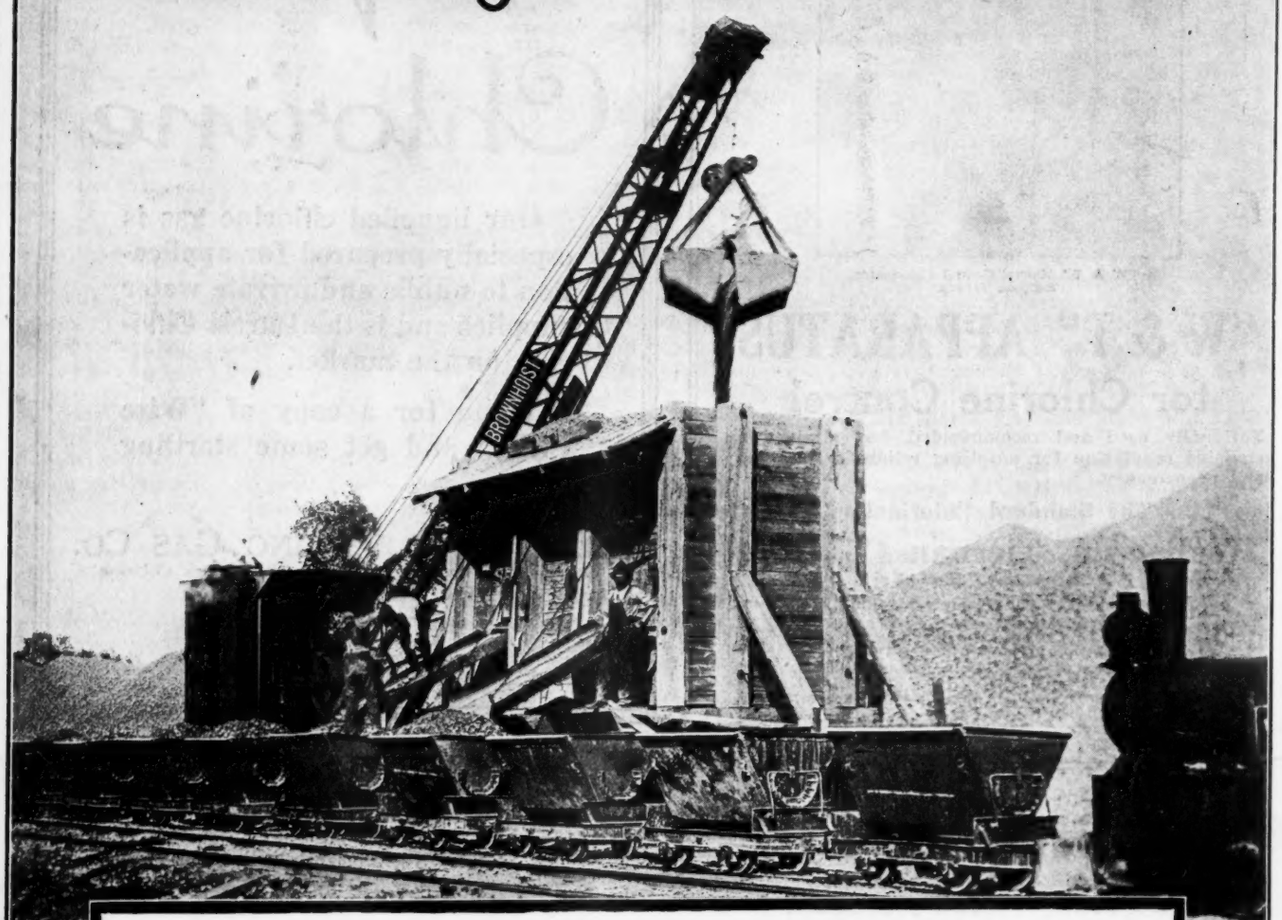

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